

# **Home Medical Handbook**

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**Dr. Jaggi**

**Orient Longman**

This Medical Handbook is a must for every home. It explains in simple terms the workings of common drugs available in the market : aspirin, barbiturates, antibiotics.....etc. with a view to promoting a better understanding of the usage of these drugs. It explains the causes, symptoms, and cures of common ailments like, headache, cold, flu ..... etc. and sets out the most desirable preventive measures against such maladies.

This book contains twenty selected medical topics of interest to the layman medical and paramedical personnel.

It discusses topics such as: Are there any harmful effects of taking tranquillizers or pain-relieving tablets?

Does smoking really cause Cancer?

Should one take antibiotics or not?

What can one do to avoid a heart-attack? What is the scientific basis of slimming diets? Have virus diseases become more frequent of late?

The author presents useful information derived from personal knowledge and experience incorporating material from some of the latest researches and developments in medical science.

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Home Medical Handbook

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Volume one : *Dawn of Indian Technology*  
Volume two : *Dawn of Indian Science*



# Home Medical Handbook

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Home Medical Handbook

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## Preface



In this book are discussed twenty important medical topics of interest to everybody: men and women, students and teachers, medical and paramedical personnel. The articles have been written simply and precisely and they include the results of the latest medical discoveries while rejecting the myths and fancies of the past.

It is hoped this book will provide the readers with practical knowledge about different aspects of medical sciences and prove useful to the largest number of people.

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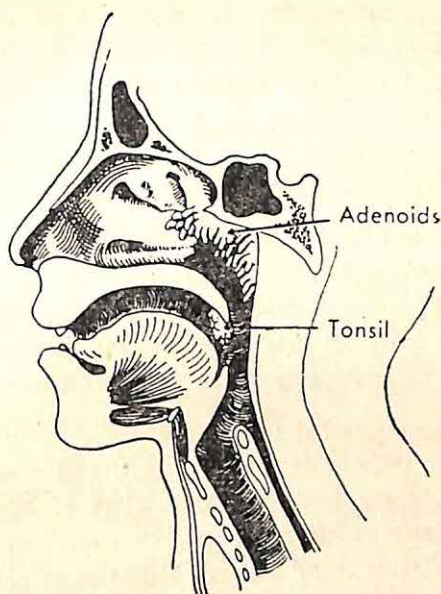
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# 1

## Precious Tonsils



Tonsils stand like two sentinels on either side of the pharynx, the middle portion of the throat. They defend the body against germs or other dangerous substances that try to enter our body through the mouth or nose. They try to trap these germs inside their structure and then with the help of lymphoid cells, of which the tonsils are made, produce protective antibodies. These antibodies circulate in the blood and fight those intruders which somehow manage to bypass the tonsils. The antibody-forming



tissue is present in other parts of the body also, but in the shape of the tonsils it forms the first line of defence of the body.

**Why do tonsils get enlarged in children?**

It is during childhood that the body is exposed to many germs for the first time and needs to be protected against them. In the process of protecting the body, the tonsils not only work more vigorously but also enlarge so that they may produce more antibodies against the germs. By the time the children grow up and are exposed to a majority of the germs, the tonsils automatically reduce in size in most cases.

**Why don't the tonsils then get enlarged in all the children?**

This is not very clearly understood yet. One explanation is that children who do not get enlarged tonsils have antibody-forming tissues in other parts of the body in more than adequate quantities. There is no need, therefore, for the tonsils to get enlarged.

**We have been ungrateful to tonsils.**

But how often these very tonsils, which have stood by us in times of peril, are condemned as carriers of infection and removed! Millions of tonsils have been removed all over the world ever since this trend started. Enlarged as well as unenlarged tonsils have been removed in children, adults and old people, for symptoms like headache, mental deficiency, enlarged liver and premature greying of the hair. There are still large queues for tonsillectomies. The proverb "Give the dog a bad name and hang him" fits very aptly here.

More commonly, however, the tonsils and their neighbours, the adenoids, have been removed for recurrent sore throats. The needlessness of the operation for this ailment has been lately exposed. In a clinical study, 4,000 children were considered to need the operation, but it was performed only on

2,000 children. All the 4,000 children were kept under observation for 10 years — a pretty long time to know and assess the results. It was found that there was no appreciable difference in the incidence of sore throats, bronchitis, pneumonia, ear or sinus infections between the two groups of children. If at all, the incidence of such ailments was slightly higher in children who had had their tonsils removed.

### Respiratory Allergy and Tonsils

It is still a subject of controversy whether enlarged tonsils in a child who gets occasional attacks of wheezing or asthma should be removed. Medical men hold three different views on this question :

1. That tonsils act initially as the site and subsequently as the source, of infection in the body. Their removal would favourably influence the course of asthma or even prevent its occurrence in a susceptible individual.
2. That tonsils perform an important function in preventing the spread of infection from the nose and throat into the bronchi and the lungs. Their removal, therefore, would lead to mild asthma developing into a severe one or even precipitate asthma in a susceptible individual.
3. That the presence or the removal of tonsils makes no difference to the allergic state of an individual. The removal of tonsils can, therefore, neither prevent wheezing or asthma nor precipitate their onset.

The majority of experienced workers now agree with the third view.

Symptoms of sore throat, recurrent bronchitis, and wheezing are generally the manifestations of an allergy and are not due to enlarged tonsils. Secondly, children with respiratory allergy

are highly susceptible to infections of the throat. Their nasal mucous membranes are swollen and, therefore, they are much more susceptible to infections. What may appear as a primary chronic infection of the tonsils to some is in reality allergy with infection superimposed. Unless the patient's allergy is recognized and treated, the infection will persist or return to trouble both the patient and his physician. If the tonsils are removed in such cases they sometimes grow again.

Physicians who specialize in allergic diseases do not favour the removal of tonsils. In their view there is no need for a tonsillectomy operation after treatment of the allergy and the infection. A comparative study of asthmatic patients in whom tonsils had been removed and those in whom they were allowed to remain, showed no statistical difference in the severity of the symptoms of asthma. Both groups showed the same percentage of mild, moderate, and severe cases of asthma.

Only if the enlargement of the tonsils is so great that they make it perpetually difficult and painful to swallow food, or if an abscess has formed inside them which cannot be treated by medicines alone, does the question of their removal arise. But such occasions are very uncommon.

In conclusion, I would say that while there is hardly any justification for the removal of tonsils, there is all the need to consult the doctor for the ailments of the tonsils so that he may properly investigate the cause and give proper treatment and thereby provide relief.



## 2

### Immunize Your Child against Various Diseases



When an infant or a child comes in contact with disease-producing germs for the first time in his life, one of the defence mechanisms of his body, namely, the white blood cells (WBC), spring into action. They wriggle out of the blood vessels and enter the area where the germs are and encircle them. They then kill these germs and thus the body escapes from disease. But if the germs are too many or too powerful, they destroy the WBC and multiply in the body. This produces the disease which may sometimes prove fatal.

### **Basis of Immunization**

After the first contact with the germs, the cells present in the body called reticuloendothelial cells start producing antibodies to fight against these germs. Now if the same germs enter the body again at some other time, they not only encounter the WBC's but also the antibodies, so that they have hardly any chance of producing the disease. The body is said to be protected or immunized against these germs.

Revelation of the fact that these protective antibodies are not available when the germs first enter the body but challenge them only at subsequent entries, set medical scientists to devise means by which they could give people the benefit of protective antibodies and also avoid the serious consequences of the first contact with the disease-producing germs. They isolated the different germs that caused diseases and let them grow and multiply on laboratory culture media. Then they added different chemicals to them so that the germs either died or became too weak to cause the disease, but were still capable of producing antibodies. Preparations of such killed or weakened bacteria or viruses are called vaccines. They are now easily available and their administration immunizes the body and protects it against even the first entry of the disease-producing germs. Immunization of infants and children against various diseases can now be achieved with the help of these vaccines. This is very important in our present environmental conditions.

### **B. C. G. Vaccination Against Tuberculosis**

Today at least one out of every 100 people suffers from tuberculosis in India so that there are over 5 million patients suffering from tuberculosis. Under present living conditions, the chances of contracting this disease are many. Tuberculosis in infants and children is particularly dangerous, as it spreads very rapidly.

B.C.G. vaccination gives protection against tuberculosis. It consists of live but very much weakened tubercle bacilli which excite production of antibodies but do not produce the disease. Vaccination with B.C.G. should be given as early after birth as possible, preferably during the first two weeks. This not only gives immunity from the earliest possible date but does away with the need to perform a preliminary Mantoux test.\* It takes about four to six weeks for B.C.G. to form enough antibodies. Vaccination should, therefore, be considered successful only if the subsequent Mantoux test turns positive.

It should, however, be clearly understood that this immunity is not absolute. If the child is exposed to very heavy infection from a source with which he is in constant contact, this immunity may not prove to be adequate.

The word B.C.G. is an abbreviation of the first letters of 'Bacillus Calmette and Guérin', the latter two being the scientists who evolved this particular weakened tubercle bacillus.

### **Smallpox Vaccination**

Small-pox in an epidemic form occurs in India and in certain areas it is still endemic. As it is a very serious virus disease against which hardly any treatment is available yet, preventive measures are absolutely necessary. The vaccination against small-pox should be performed before the age of six months. The first vaccination is considered successful only if it produces a severe local reaction. Thereafter vaccination should again be done at the age of entering school and then at the school-leaving age. It is desirable to have re-vaccination when there is an outbreak of the disease in the area. The second and subsequent vaccinations cause only a slight reaction.

\* A skin test to find out whether the tubercle bacilli have entered the body or not



### **Triple Vaccine**

This is a combination of three vaccines consisting of killed germs of whooping cough, diphtheria and tetanus. It provides protection against all three diseases. Whooping cough is a very common disease of infants and children and occasionally causes serious damage to the lungs. Diphtheria generally occurs in infants and children. The risk is the greatest between the age of one to two years. Diphtheria is very common in Delhi between August and November, the maximum frequency being in the month of September. Tetanus follows the entry of tetanus germs into the body. These germs are present in the soil, and gain entry as a result of an accidental wound or injury. It is a dreadful disease and, if proper treatment is not available, can prove fatal.

Immunization with Triple Vaccine should be started at the end of three months or the beginning of the fourth month. One c.c. is given every month for three injections. A booster dose of 1 c.c. to energise the production of antibodies should be given between the age of two and three. One more booster dose of 1 c.c. when the child is five to six years old gives immunity against these diseases during the years at school.

Triple Vaccine injection should not be given if the child has an acute infection or has come in contact with a case of polio or if there is a polio epidemic in the locality.

### **Polio Vaccine**

Contrary to general belief, polio is a very common disease in India and 95 per cent of the children upto the age of three suffer from it. The highest incidence of the disease is between the ages of one and three. Luckily paralysis in polio is not very common.

For over a decade now, an oral vaccine has been made available. It contains all the three different live strains of the polio

virus, but in such a state that they do not cause the disease and yet produce immunity. Two doses of this vaccine are taken at intervals of six weeks, of which the first dose is at the age of six months.

**Typhoid-Paratyphoid and Cholera Vaccine (T.A.B. with Cholera)**  
Children are more liable to suffer from these diseases because of their ignorance of hygienic rules. The first T.A.B.C. injection of 0.15 c.c. to 0.25 c.c. is given between the ages of one and two years when the child starts taking an ordinary diet. The second injection of 0.25 c.c. to 0.5 c.c. is given after one week. Thereafter a booster dose of 0.25 c.c. to 0.5 c.c. is given every year before the month of June. The season for the outbreak of these diseases lasts from June to October.

Vaccines against virus diseases such as measles, mumps, and chicken-pox are still in the experimental stage.

### Recommended Immunization Schedule

<i>Vaccine</i>	<i>Age</i>
B.C.G.	7 — 10 days of birth.
Small-pox	1 Primary vaccination 3-6 months. 2 Repeat at time of entry to school and then again at the time of leaving school. 3 Repeat whenever there is an epidemic.
Triple Vaccine	1 Three injections of 1 c.c. each at the 4th, 5th and 6th month. 2 One injection at the age of entering school. 3 One at the time of leaving school.

Polio (Oral)

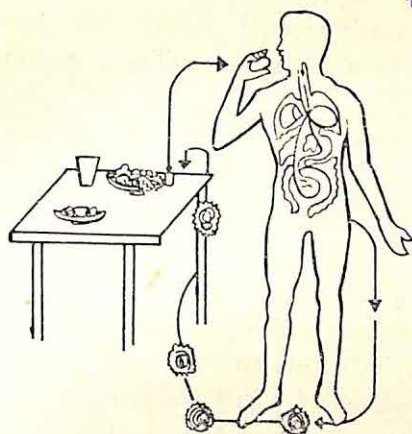
First dose at 6 months.  
Second 2 weeks later.

T.A.B. with cholera

- 1 In 2nd or 3rd year two injections with an interval of one week.
- 2 Thereafter every year before the start of the season of these diseases.

### 3

## Worms in the Intestine



Life Cycle of Round Worm

Worms in the intestines do not kill the human host because it is not advantageous for them. They feast on his blood and enjoy the food that he takes and it makes them, not him, healthy. They also create irritations such as abdominal upsets, diarrhoea, restlessness, irritability and general ill-health, but they cause the greatest disturbance when they glide out beyond the intestines.

Approximately one-third of the world's population is affected by worms of one kind or another, particularly in those underdeveloped countries with poor hygienic conditions where the climate is moist and humid. The Indians are among the most heavily infected people in the world. In some villages in Uttar Pradesh, over 90 per cent of the people have hookworms in their intestines. In other places the number of people affected



varies from 20 per cent to much more. Thread worms, commonly found in children occur frequently in both rural and urban areas. The large round worms are spread all over India, especially in Kashmir, from where hardly a visitor comes back uninfected. Malnutrition and chronic infections prevalent in our country, heighten our susceptibility to worms causing much ill-health.

There are different types of worms which vary in size, shape, the route of entry into the body and the damage which they cause. The following ones are common and important.

### **Thread Worms**

They derive their name from the fact that they look like small pieces of white thread, in freshly-passed stool. The female worm is about half an inch long and the male is half that size. The females are conspicuous by their shiny white appearance which they get from the presence of a large number of white eggs inside them. Thread worms live in the large intestines. When the female becomes pregnant and heavy, it travels down to the lower-most part of the large intestines, comes out through the anus and lays eggs on the skin around it. The presence of the worm there causes irritation. A little scratching by the child in fact hastens the release of the eggs. The normal life span of the worm is only four to six weeks which means that an infected child should normally clear up automatically during this period. But unfortunately, reinfection is very common. Let us see how this occurs.

Three to four hours after the egg has been laid, an embryo develops in it in the same way as a chick develops in the hen's egg. This embryo remains alive in its shell for four to six days. When a child scratches the area around the anus the eggs stick to his fingers. Now when the child takes food or puts the un-

washed fingers in his mouth, the eggs enter into the intestines, their outer shell bursts and the little worms come out. When this is repeated, it results in very heavy infection. The eggs can also enter indirectly from soiled underclothes into the air, then infect articles of food, and thus get access to the mouth and intestines.

A heavy infection with thread worms causes restlessness, irritability, disturbed sleep, poor health, and irritation around the anus or genitals.

Precautions such as the observance of hygienic personal habits are therefore essential. The hands and particularly the finger nails must be thoroughly washed before taking food and after passing stool. Children should be trained not to suck their fingers or scratch the skin around the anus. Unless the infection is detected in time and eradicated, there is danger of this disease infecting a whole family. Then it becomes much more difficult to root out.

The best treatment is the taking of piperazine compounds (Antepar); though this should be taken only in consultation with the doctor.

### Round Worms

Round worms are passed out with the faeces, vomitted out through the mouth, and sometimes they even crawl out through the nose. As in the case of most worms, the female is larger, varying from six inches to a foot in length and a quarter of an inch in diameter. The male is about half this size. These worms are whitish or creamy-white in appearance. The life-span of a round worm is approximately one year, and it lives in the upper part of the intestines. Each mature female worm lays about 2,00,000 eggs per day which are passed out of the intestines in the stool.

The worm matures and flourishes while it travels extensively



in the body. The egg passed out with the faeces lies about on the ground and, given a moderate temperature and humidity, the embryo appears in about two to three weeks. This egg is now infective to man. If it enters through the mouth along with some article of food like unwashed raw vegetables or contaminated water, it reaches the stomach where it loses its outer shell and out comes the tiny larva. This pierces the lining of the stomach, reaches for the nearest blood vessel, enters it and then glides into the blood stream. It reaches the lungs, pierces the lung capillaries and enters the alveoli. If the number of larvae in the alveoli is large they set up small patches of pneumonia and the patient develops a cough or slight breathlessness and fever and there is an increased number of eosinophil cells, one of the white cells in the blood. From the alveoli, the larvae travel up into the smaller and then the larger bronchi, reach the trachea, traverse it and come into the throat from where they go down the adjacent channel, the food pipe. They cross the stomach and reach down to the small intestines, where they settle down to mature.

As in the case of thread worms, so also here, the best treatment is the taking of piperazine compounds (Antepar).

Sometimes the adult worms get irritated and then move about in the adjoining organs such as the bile duct, gall bladder, liver, or even up towards the nose and mouth. Dozens of them entwine and form a mass which obstructs the passage in the intestines or in the liver. This causes acute pain in the abdomen, a condition which can only be handled surgically.

### **Hook Worms**

They get their name from their hook-like mouth. They catch a mouthful of the lining of the small intestines in their powerful jaws, and the rest of the body dangles about in the intestine.

They suck the blood and flourish on it, making the host anaemic.

These worms are small in size, the female being about half an inch long and the male half that size.

The eggs released by the female worm come out with the stool and, given moderate temperature and humidity, the embryos appear in 8 to 10 days. The outer shell then being cast off, the active larvae come out and lurk about on the ground. Those who go bare-footed are likely to catch the infection because the hook worm pierces the soft skin of the feet in between the toes. At the site of entry it causes a slight irritation. After piercing the skin it reaches the nearest blood vessel into which it enters. Once in the blood stream, the worm moves with it and reaches the lungs. There it comes out of the lung capillaries, enters the alveoli and then like the roundworm larvae it crosses the trachea and after reaching the throat, goes down through the oesophagus into the small intestines where it sticks to the lining of the intestines and matures on the blood that it sucks.

Some protective measures against hook-worms are as follows : Good hygienic habits such as washing the hands and keeping them clean, defecating in proper latrines, wearing shoes or chappals outside and even inside the house, drinking clean water, boiled if necessary, and thoroughly washing vegetables that grow underground before eating them. The best treatment is the taking of Bephenium naphthoate (Alcopar) but this should be taken in consultation with the doctor.

#### **Human Infection with Worms Normally Belonging to Animals**

Eggs of the round worms which usually infect animals like cats and dogs, sometimes enter the human system as for example, when a child picks up from the ground and puts into his mouth something that is contaminated. This can lead to serious ail-

ments such as an enlarged liver or anaemia or to occasional low grade fever with a high count of eosinophil cells in the blood. Children should be properly instructed and care taken to see that they do not put mud (geophagia) into the mouth.

## Be careful! Tuberculosis is around you

### Case Reports

(1) A one year old child with a diminished appetite, became very irritable and after three days developed fever upto 102°F. The next day his mother noticed that he could not move his neck; it had become stiff and rigid. Taken to the physician he was diagnosed to have tuberculous meningitis — tuberculosis of the coverings of the brain. The early detection and intensive care and treatment by a competent physician resulted in the complete recovery of the child in six months, otherwise the condition might have proved fatal.

How did this small child contract tuberculosis? He could have contracted the disease only from his immediate contacts. On examination, no other member of the family was found to have tuberculosis. They had, however, three months earlier employed an 'ayah' (baby-sitter) in the house to look after the child. A physical examination and an X-ray of her chest showed that she was suffering from pulmonary tuberculosis and was passing tubercle bacilli in her phlegm. There was little chance



for the child to escape getting the infection, because he remained in very close contact with her throughout the day. But if the parents had taken care to get the 'ayah' examined before employing her, this near-fatal situation would not have arisen.

(2) In a six-monthly medical check-up of some school children, it was found that the incidence of the Mantoux positive test — a skin test which indicates whether tubercle bacilli have entered the body — had increased by 25 per cent as compared with the previous examination. This was a cause for alarm. The doctor took miniature chest X-rays of the children who had newly become Mantoux positive. Four out of these 52 children had tuberculous lesions in the lungs. They were immediately put under treatment and the others were kept under observation.

How could all these children become infected with tuberculosis? The doctor was certain that the source of infection was inside the school. A thorough check up of the whole staff revealed nothing. Then it was noticed that all these infected children travelled by the same school bus. An X-ray chest and sputum examination of the bus driver showed that he was an open case of tuberculosis. In fact, he had taken leave from work many times during the last six months because of ill health, but beyond granting him leave, nobody had taken any further trouble of investigating his illness.

Interestingly enough, it was also noticed that the four children who were heavily infected and had developed tuberculosis always sat on the front seats of the bus near the driver.

(3) A worker in a cotton mill attended the clinic with complaints of cough with a lot of phlegm, low grade fever and general weakness. An X-ray chest and sputum examination showed that he was passing tubercle bacilli in his sputum. Investigations conducted with the help of the social worker re-



vealed that in the section in which he was working, there were two more cases of tuberculosis who had as yet developed no symptoms, though an X-ray of their chests revealed lesions. Their sputum was negative for tubercle bacilli. Obviously they had been infected by the first worker. The mill manager admitted that the first patient had occasionally taken leave on ground of ill-health, but he never thought of tuberculosis because a slight cough and indisposition was not uncommon amongst workers in his mill.

(4) A young lady gradually felt tired towards the evenings and also had a diminished appetite. She did not pay much attention to this as she thought it was due to over-work. She developed fever a few days later and it was labelled and treated as typhoid but without much relief. Physical examination and X-ray of the chest later revealed that she had tuberculosis which was yet in its early stage.

How did she get it? She was living with her husband and his old mother. The old lady had a phlegmatic cough for many years but the couple thought that this was chronic bronchitis, 'due to stubborn cold to which old people are very susceptible'. X-ray and sputum examinations of the old lady, carried out on the persistent advice of the doctor, revealed that hers was a case of chronic tuberculosis and she was passing tubercle bacilli in the sputum.

#### Who spread the infection?

I have come across many people who have the impression that a tuberculosis patient looks emaciated, has an incessant cough and fever and is generally bed-ridden. The above case reports, I am sure, will help dispel this notion. Many tuberculosis patients can and do carry on their routine work and move about without much difficulty for months and years together. These are the people who spread the disease.



Over five million people suffer from tuberculosis in India, of which about 1.5 million pass tubercle bacilli in their sputum and are thus a source of infection. It is, therefore, not surprising that with such a vast reservoir of infection in our country, about three-fourth of the population is exposed to tubercle bacilli at one time or another.

### **Body Reaction to Tubercle Bacilli**

When tubercle bacilli from the air are inhaled into the lungs, they excite a local irritative reaction as a result of which white blood cells and other body defences come into play and try to localize the germs and check their multiplication. If the defences of the body prove to be strong, a scar results into which calcium is deposited to entomb the tubercle bacilli wherein some of them remain alive but inactive. The Mantoux test in these people gives a positive reaction in the form of local swelling and redness of the skin. Such people need occasional check-ups, though normally there is not much cause for alarm.

If, however, the defences of the body are inadequate either as a result of heavy infection or due to malnutrition, tubercle bacilli multiply and spread the disease locally in the lungs and also in other parts of the body.

### **Management of Tuberculosis**

When a person is diagnosed to be suffering from tuberculosis, several steps have to be taken.

1. If the sputum report shows that the patient is passing tuberculosis germs his isolation is essential to protect others.
2. Proper treatment of the patient himself.
3. Investigations to find the source of infection.
4. To whom could he have passed the infection.



Be careful ! Tuberculosis is around you.

Let us examine these in detail.

If the patient is intelligent and co-operative, it is not considered necessary that he be isolated in a T.B. Hospital. He may live in the same house with others but in a separate room and he must carefully dispose off the virulent phlegm. It is, however, essential that the patient be examined periodically and the stage of the disease be assessed, so that the necessary drugs in correct dosages are administered in time. T.B. clinics in various localities are best equipped for this kind of work. A reluctance to attend these clinics and follow the suggestions they give can lead to serious consequences.

It reminds me of a patient, a young girl, who attended a clinic when the disease was fairly far advanced. Her father was advised to isolate the patient and to bring her regularly to the clinic. But this he did not do. He had heard that certain injections and tablets were all that were required to cure the patient. He did not think it wise to take the patient frequently to the clinic, nor to call a doctor, not because he could not afford one but because his neighbours would then come to know of the disease. He learnt to give the injections himself. The result was unfortunate, though not entirely unpredictable. The patient did not improve and her brother also contracted the disease. Now in this desperate situation for which he himself was responsible, the father sought the advice of the clinic again and followed all the instructions carefully. Both his children are now well on their way to complete recovery.

#### Protective B.C.G. Inoculation

Investigation of all people, particularly children, who have been in contact with a tuberculosis patient, is necessary to take protective measures and nip the evil in the bud. Such facilities exist in T.B. clinics and in hospitals; these should be availed of whenever necessary. B.C.G. vaccination of such children and



even of adults who show a negative Mantoux test, (which indicates that they have never been exposed to tubercle bacilli) is necessary, if there is any likelihood of their being exposed to tubercle bacilli. The recommendation of the W.H.O. Expert Committee in this regard is as follows:

*"It is considered that the number of individuals who would benefit from B.C.G. vaccination on a large scale would be especially large in communities in whom tuberculous infection and disease is frequent."*

Such conditions exist in our midst today.



## 5

### More about Pain-relieving Tablets

If I were given the choice of using only one medicine for treating patients, I would unhesitatingly choose aspirin, an old (first used in 1899) and widely tried drug; but before prescribing it to my patients, I would think twice whether they can do without it.

Thousands of tonnes of aspirin are consumed every year all over the world and for a variety of ailments. It relieves aches and pains, feverishness, colds and the flu. Without it, inspite of modern miracle drugs, the world would be certainly more painful to live in.

Aspirin is commonly used in combination with other similar pain-relieving drugs such as phenacetin, amidopyrine, phenylbutazone, codeine, etc. A combination of all or many of them in the form of a tablet is a more effective pain-reliever.

Though used widely, it cannot be said that these pain-relieving tablets are wholly harmless. Sometimes they cause serious reactions and diseases and it is better to know more about them.

## Aspirin

### *1. Can Cause Ulceration and Bleeding in the Stomach*

Aspirin, which is almost always present in pain-relieving tablets, even in the ordinary usual dosage, causes irritation of the lining of the stomach, so that about 70 per cent of users develop small ulcers. From these, blood oozes, gets mixed with the food products and is passed out in stools, where the blood does not appear red because of a chemical change. It can, however, be detected by appropriate tests. The more the aspirin taken, the greater the blood-loss, and habitual use of it can lead to anaemia. Small ulcers that form in the stomach can be clearly seen through a Gastroscope — a lighted tube introduced through the mouth into the stomach. Aspirin also aggravates stomach ulcers that may already be present; aspirin therefore, either alone or in combination with other drugs, is dangerous for those who get stomach upsets or pain in the stomach.

### *2. Hypersensitivity Reactions to Aspirin*

While most people who take the usual dose of aspirin suffer no immediate outward ill-effects, there are some who are hypersensitive or allergic to it and they suffer from a variety of adverse reactions. Skin rashes or urticaria over the whole body or over the eye lids, lips, and face are known to occur after taking aspirin. Swelling of the tongue, throat, and larynx is sometimes so severe that it leads to suffocation. Patients with an allergic constitution should, therefore, be very careful in taking aspirin. Some of these patients get severe attacks of asthma after taking aspirin; others, though rarely, get an anaphylactic shock, like the one which sometimes occurs after an injection of penicillin.

Children, more frequently than adults, react badly to aspirin. They may feel dizzy, sweat profusely, suffer from thirst, rapid breathing, nausea, vomiting; some cases of poisoning have also

been reported. These tablets should, therefore, be kept out of the reach of children.

### **Phenacetin**

Phenacetin, another common constituent of pain-relieving tablets, is known to cause and aggravate kidney trouble and hence should be avoided by people who have kidney disorders. It can also cause anaemia, and, rarely, methaemoglobinemia, in which the whole body turns blue, because it destroys the capacity of the haemoglobin of red blood cells to carry oxygen.

### **Amidopyrine and Phenylbutazone**

These are present in some pain-relieving tablets and occasionally cause destruction of the white blood cells (WBC), thus exposing the body to various diseases.

Adverse reactions which pain-relieving tablets can cause are under-estimated both by laymen as well as by doctors. It is necessary that these should be well understood and kept in mind so as to avoid over-use of potentially harmful drugs.

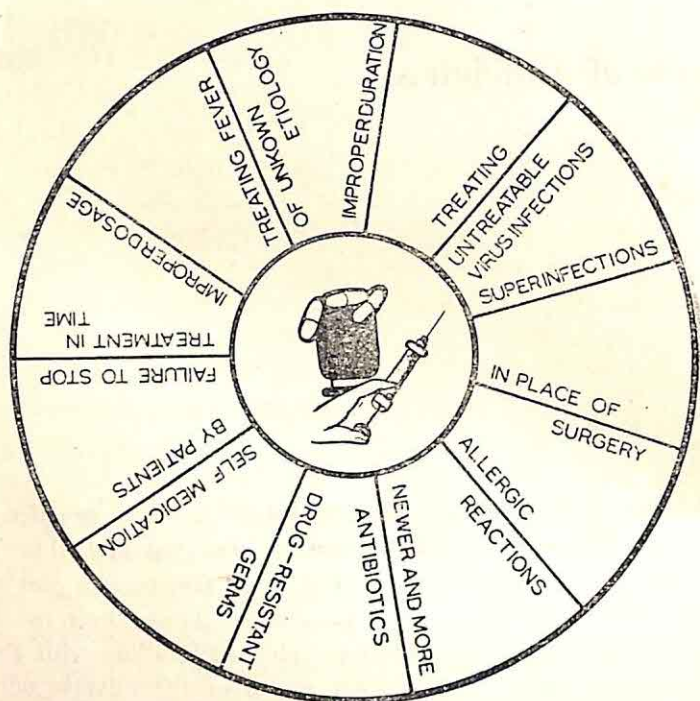
## Misuse of Antibiotics

Antibiotics have undoubtedly revolutionized the practice of medicine. They have saved millions of lives, lessened ill-health, and have prolonged the human life span. During the past two decades, ever since these drugs became available, their use has achieved many a miracle. Most people are familiar with these drugs though some are not fully aware of the adverse effects which they can cause. It is the misuse of antibiotics and the consequent adverse effects that we shall now consider.

### Treating the Untreatable Virus Infections

The common cold, influenza, and in fact over 90 per cent of all infections which give rise to congestion and stuffiness in the nose, throat, upper part of the chest, producing slight cough and feverishness are caused by viruses. Antibiotics such as penicillin or tetracyclines are not useful against these or other virus infections. But in spite of this well-known and well-established fact, certain doctors prescribe, and many patients expect to be given antibiotics for these conditions. This is a gross misuse of these drugs. All that is required to cure the common cold is a





few doses of aspirin or a similar drug and adequate rest. Rest is not only of help to the patient himself, but also checks the spread of infection to others. It is, however, necessary that a careful watch be kept over the possibility of getting bacterial superinfections and developing chest complications on top of the cold. This is so if the cold takes very long to subside or there is a relapse of fever with cough and phlegm.

### **Treating Fever of Unknown Etiology**

When fever in a patient has lasted for more than two or three

weeks, some physicians first treat it with one antibiotic then another. If that does not help, then two or more antibiotics are given in combination. Only when this also proves a failure, is an attempt made to diagnose the disease.

This procedure of 'putting the cart before the horse' i.e. of treating the patient first and establishing the diagnosis later is very harmful. It delays treatment of the real disease, which often results in a further deterioration in the patient's condition, and the spreading of the disease to other parts of the body. Sometimes the disease becomes untreatable. Among other causes, prolonged fever may be due to inflammation of the heart, collagen diseases, or even cancer, particularly of the lymph nodes. In such cases delay in treatment is very harmful.

### **Improper dosage**

Antibiotics have to be given in particular dosages for different diseases. The dosage also varies during different stages of these diseases. Too large a dosage of tetracyclines, for instance, causes damage to the liver; of streptomycin, defects in hearing and imbalance of the body; and of sulphanamides, obstruction in the urinary passages. Accidentally high levels of antibiotics in the body can also occur if the patient has a diseased kidney or liver so that even if the antibiotic is given in proper doses it gets accumulated in the body and causes toxic reactions. Carelessness or ignorance of such details in the use of antibiotics has led to harmful results.

Similarly, antibiotics given in inadequate dosage results in perpetuation of the disease in the patient, which could have been easily cured with a higher dose.

### **Improper duration**

Sometimes an antibiotic is given for a shorter duration than is required. Generally the patient is responsible for this. He is

advised properly by his physician to take a certain number of injections or capsules of the antibiotic, but he takes only one shot or a few capsules and then discontinues further treatment. He feels slightly better and thinks that he has been cured. This results in the recurrence of the disease after a few days.

### **Failure to Stop Treatment when Necessary**

The most dangerous misuse of antibiotics is their continuance even though they are causing harmful reactions which are not recognized in time. These reactions may be in the form of a skin rash, fever, destruction of the blood cells, bleeding and obstruction of the urinary passages. The patient thus suffers more from the serious side-effects of the drugs he is administered than the disease for which he is being treated.

### **Super-infections**

Antibiotics, being powerful drugs, kill all germs in the human body that are susceptible to them. Such large scale killing results in the multiplication of other germs which resist the action of the antibiotic, and start a new disease. This has happened in abdominal operations where superinfection with the resistant staphylococci has led to inflammation of the intestines. This inflammation could not be treated with any of the available antibiotics. Disastrous results have followed. A similar situation arises sometimes when antibiotics are given for throat and chest infections, after which various resistant fungal infections set in.

### **Reliance on Antibiotics where Surgery is Indicated**

Antibiotics can prevent the formation of pus, but they cannot remove pus which has already formed in the body. In a disease called empyema where pus forms between the two layers of the pleura that cover the lungs, no amount of antibiotics help unless the pus is first drained out surgically. In tuberculosis when part of the lung has been destroyed and a chronic cavity formed



within it, treatment with antituberculous antibiotics cannot cure the disease unless the cavity-bearing part of the lung is surgically removed. Similar is the case with an abscess anywhere in the body, either in the brain, lungs, liver, or somewhere else. To rely on antibiotics in such situations is to make a demand on them which they cannot fulfil.

### **Use of New And More Expensive Antibiotics**

Some people like to use new and more expensive antibiotics in situations where the cheaper, older and well-tried ones are equally effective. This means that the treatment not only becomes more expensive but also more risky.

### **Self-medication by patients**

A colossal misuse of antibiotics is made by educated laymen. They think they can take a particular antibiotic because the doctor had earlier prescribed this for a similar complaint. They take a few capsules and repeat the process when they consider this necessary. Others, when they are unwell, do not consult a physician but instead treat themselves with any antibiotic that comes to hand. This lands them in trouble.

It is necessary to sound a note of serious warning against a layman medicating himself with antibiotics without the direction and supervision of a physician.

### **Allergic Reactions**

An extravagant use of antibiotics can lead to many people becoming allergic to such drugs. Antibiotics such as penicillin consist of large molecules which on combination with proteins in the body act as antigens and can lead to the formation of corresponding antibodies inside the body. A second or subsequent entry of penicillin into the body can lead to a reaction between it and the antibodies. Depending upon the severity of

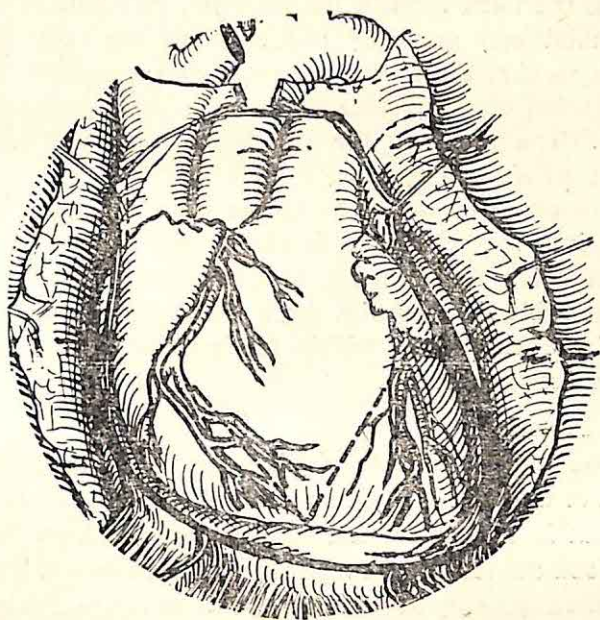


this reaction, various allergic manifestations occur varying from urticaria to an anaphylactic reaction with almost instantaneous death. An investigation into many such cases has revealed that there was hardly any necessity for giving penicillin.

### Drug-Resistant Germs

More serious from the public health point of view, is the development of insensitivity or resistance of the disease-producing bacteria to various antibiotics, to which they were sensitive before. While only 4 per cent of the various staphylococci (one of the pus-producing bacteria) were resistant to penicillin in 1950, now more than half are resistant. Now it is they that produce various devastating diseases. Similar is the case with tubercle bacilli many of which have become resistant to anti-tuberculous drugs so that treatment is becoming increasingly difficult. Infection from drug-resistant bacteria is not only a personal threat, but greatly concerns the health authorities who plan the prevention and eradication of such diseases.

## Heart Attack



Coronary Arteries

A heart attack is the culmination of a process similar to the fusing of an electric bulb. A bulb fuses suddenly but the wear and tear of its coil starts from the time it first starts functioning. Similarly, a heart attack occurs suddenly but changes in the heart take place over a period of many years.

Let us see what these changes are, how they bring on an attack and how we can prevent them.

### **Structure of the Heart**

All of us have seen fields being irrigated with water. From the canal or well, water flows along channels which narrow gradually as the water spreads. But have you ever noticed that the silt or mud very gradually collects along the walls of these channels making them even narrower, and sometimes the sudden intrusion of a big stone or similar object, stops the water flowing? The plants in the area beyond the obstruction are thus starved of water and they shrivel up.

The structure of the walls of the heart enclosing a cavity divided into four chambers, is like a well irrigated field, the channels being the branches of the coronary arteries which bring fresh blood to nourish the walls of the heart. A gradual narrowing of these arteries is the fundamental change that gives rise to subsequent events.

### **Angina Pectoris**

When we undertake some physical exertion, the heart needs more than usual fresh oxygenated blood to do the extra load of work. But in a person whose coronary arteries have thickened extra blood cannot pass through the narrowed vessels. The heart muscle is temporarily starved of oxygen and the person generally feels a pain in the chest. When the person stops the physical exertion he experiences a sense of relief. He is said to have developed what in medical language is called Angina Pectoris. This condition can be brought under control with drugs, avoidance of excessive exertion, and a reduction in weight. There is no cause for serious alarm.

### **Symptoms of Heart Attack**

But when an obstruction occurs in one of the narrowed arteries,



that part of the heart which it normally supplies with blood shrivels up and may cease to function. The patient is said to have developed coronary occlusion or thrombosis and consequent heart or cardiac infarction commonly known as a heart attack. Such a patient may get sudden and prolonged pain in the chest and occasionally in the left arm also, with shortness of breath. When such symptoms are noticed the patient should be made to lie in bed with his head propped up.

A doctor should be sent for. The specific part and extent of the heart affected can be found out by taking an Electro-cardiogram. If the part of the heart involved is large or is an important one, serious consequences may follow. But if the area affected is small the heart may not function efficiently for a few days or weeks, but then recovers gradually. Complete rest in bed for the first two weeks is essential. For the next four weeks the patient may move about inside the house and then resume his normal routine. Thereafter he should avoid strenuous physical exertion, take a light, easily digestible diet, avoid smoking and use the minimum of fat, preferably in the form of an edible oil.

Narrowing of the coronary artery occurs in some individuals and not in others. There are some interesting observations in this regard. Heart attacks are more common in men than in women, in the urban population than in the rural, more in some families than in others. Its incidence is higher among prosperous people and in advanced countries. Stout and overweight people are more susceptible to this disease.

### **Role of Fats**

A high intake of fat and inadequate physical exercise seem to increase the level of cholesterol and other fatty constituents in the blood and this leads to their being deposited on the inner walls of the blood vessels, making them narrow. It also thickens



the blood which then clots easily and obstructs the narrowed blood vessels.

So far as is known, edible oils are less harmful than the hydrogenated solid fats available in the market under various trade names and commonly called *Velati Ghee*. *Desi ghee* derived from milk comes somewhere between the above two.

### Role of Physical Exercise

It is important to know that regular physical exercise lowers the level of fat in the blood. Today mechanical aids and forms of transport in technologically advanced countries and even in the big cities of India, have reduced muscular work for many to a minimum, thereby increasing the frequency of heart attacks.

This, however, does not mean that one has to go back completely to the conditions of the past to avoid this disease. But more physical exercise should be done regularly. I recommend gardening and long walks as the most beneficial forms of physical exertion. Some games are also equally useful. This coupled with less fat in the diet and avoidance of overweight, mental strain and smoking, are good protective measures, particularly for those who have already had a heart attack. These measures should be started as early in life as possible.

I know of a patient who has had three heart attacks within a span of five years, the first of which occurred at the age of fifty-five. Last year at the age of eighty-two he had to undergo a surgical operation in connection with difficulty in passing urine. Yet he is now eighty-three years old and is still healthy and socially active because he does not allow himself the luxury of taking fatty substances and reduces by half a kilogram every year.

### How can a wife help her husband?

There is one matter to which I would like to make a passing

reference. This concerns ladies particularly. Women are much less susceptible to heart attacks and, therefore, they may be less interested in it. But as this may involve their husbands, they can play a significant part in the prevention of this disease. A man may be careless about his health while he struggles hard to succeed in life. In that case it is necessary that the wife makes sure that he leads a regular life and gets himself periodically examined by a doctor even though he might consider himself to be in normal health. The wife can thus ensure the security and well-being of the whole family.

## 8

# High Blood Pressure—Low Blood Pressure

### What is Blood Pressure?

It is the pressure exerted by the blood against the walls of the arteries through which it flows. Blood pressure is highest each time the heart contracts and pumps out blood into the arteries. The reading at this time is called systolic, as systole means heart contraction. The blood pressure falls to its lowest level when the heart is relaxing. This reading is called diastolic, as diastole means heart relaxation. Both these blood pressure readings are generally recorded as the higher systolic pressure over the lower diastolic pressure, for example 120/80.

### Blood Pressure Variations

The level of blood pressure in normal health varies from individual to individual. There is no fixed normal reading of blood pressure. Though a majority of people have a reading around 120/80, there are a few normal healthy individuals in whom it is as high as 150/90 and others with as low as 100/65. They are also normal, in the same way as a healthy person with a

height of 6 feet 3 inches or another of 4 feet 9 inches is normal, even though they cannot be considered as average. Beyond the above figures, the blood pressure is considered as abnormal.

Blood pressure reading also varies in the same individual. It falls temporarily during sleep and rises during activity or excitement. In fact, blood pressure has sometimes been seen to record a slightly higher reading when the doctor who is taking it belongs to the sex opposite to that of the patient. Generally speaking, blood pressure normally also rises as one grows older.

### **Blood Pressure Regulation**

The degree of blood pressure is regulated by various factors. Stimuli from the nervous system and the consequent body responses, particularly the hormonal secretions of various endocrinal glands of the body are the important ones. The kidneys also participate by releasing or accumulating a variety of secretions. These factors influence the blood pressure level by controlling the relaxation or contraction of the smaller blood vessels. If the blood vessels relax readily, the blood forced out by the heart can be accommodated in the vessels easily without heightening the blood pressure.

### **High Blood Pressure or Hypertension**

But if the blood vessels do not relax readily then as the blood is forced into them by the heart, the pressure in the blood vessels rises and remains so even in diastole. This progressive lack of relaxation of blood vessels increases blood pressure over a period of time.

### **Consequences of Hypertension**

As the blood vessels do not relax to receive the blood from the heart, the heart has to work harder against this resistance. This strains the heart, so that it ultimately fails to perform its func-



tion. Increased pressure in the blood vessels makes them liable to burst at any of the vulnerable sites as for example in the brain, giving rise to brain strokes. Again, hypertension accelerates the process of hardening and narrowing of the blood vessels, called atherosclerosis, which occasionally results in obstruction of the coronary arteries which nourish the heart, leading to a heart attack.

Narrowing of blood vessels in the kidneys leads to smaller quantities of blood being passed through them for purification, so that waste products gradually accumulate in the blood resulting in uraemia.

### **Treatment of Hypertension**

Hypertension, if untreated, shortens the life span.

When hypertension is accompanied by over-weight, the increase in mortality is greater than can be accounted for by either condition by itself. Overweight is more damaging for hypertensive people than for others. They should reduce, and avoid undue mental exertion to bring down blood pressure to some extent. Elimination or drastic reduction of common salt in the diet also helps. Avoidance of alcoholic drinks, smoking, and cutting down on coffee or tea are some helpful measures which often by themselves are enough to control hypertension.

In addition to these measures, some hypertensives need the help of drugs. During the past two decades, a variety of new drugs have been discovered which can lower high blood pressure. A good physician is the best judge to know when and what drugs to give to any particular patient. Many chronic diseases of the kidneys also cause hypertension. Treatment of these conditions, particularly when they involve only one kidney, restores blood pressure to normal.

The outlook for the control of hypertension is becoming in-

creasingly better and there is now no cause for alarm over the diagnosis of high blood pressure in an individual case.

### **Low Blood Pressure**

Slightly lower blood pressure reading should cause no alarm. This is especially true in a middle-aged or elderly individual who feels normal but has a blood pressure of 100 to 110 systolic and 65 to 75 diastolic. It certainly does not imply a weak heart. Fatigue and a feeling of weakness in such cases generally occurs only after they have been told that they have low blood pressure and, therefore, is purely a psychological reaction. An isolated finding of lower blood pressure calls for no treatment at all.

One out of ten cases of low blood pressure may be the result of some of the rarer diseases such as adrenal deficiency. In these cases, other symptoms of those diseases invariably occur. Such cases need thorough investigation to find out the primary cause and to treat it accordingly.

## Obesity and Slimming

A person is considered overweight when his weight exceeds 10 per cent of what it ideally should be, taking into consideration the height and sex of the person. Overweight people are more prone to heart diseases, high blood pressure, diabetes, diseases of the joints, and accidents. They also do not stand surgical operations well. An excess of 10 kg. lessens the expectation of life by 25 per cent, and the more the excess weight the lower is the life expectancy.

It is not that people who are overweight do not know or do not care about the frightening prospects ahead. At least one out of every twelve men and one in every six women you come across at a tea party or dinner table will tell you, 'I am on a reducing diet'. However, while such ladies may take only half a tea-spoonful of sugar in their tea, they do not hesitate to gulp down one or more pastries, and an overweight gentleman prefers to take tea without sugar but he does not mind relishing a full 'Tandoori Murga'. No wonder when you meet such people year after year,



they have increased in weight, though they have been on a 'diet'.

### **What causes Overweight**

When they do not slim on such a diet, some blame their thyroid and pituitary glands whose sluggish functioning, they say, is the cause of much of their fat. This, however, is not the truth. Only a very small percentage of overweight people have poorly functioning glands and this type of obesity is easily recognisable. Others incriminate their inherited predisposition and say, "We are all overweight in our family; my father and his father also were overweight and so is my uncle". But the facts are different. It is not their heredity which made them overweight, but the family habit of over-eating. Many mothers still believe that to be fat is a sign of strength and health, so they insist that their children eat a lot. And habits acquired in childhood are carried over into adult life. Some of these heavy eaters find great satisfaction in eating. They seem to live for eating only.

So in nine cases out of ten, overeating is the cause of overweight. In the tenth case, it is due mostly to lack of physical exercise. Sluggish glands cause overweight among only a small minority of fat people.

### **False Notions**

A vast majority of people who are overweight do not know how to reduce. This is not strange when we know that they hardly ever consult a competent doctor. They follow the advice of laymen or self-styled specialists.

Sometimes they take a single article of food such as curds, skimmed milk, tomato juice, spinach, etc. twice or thrice a day for a month or so. Others cut out certain foods such as potatoes and sugar because of their alleged fattening effect. Still others



take only uncooked foods. To many such people dieting and starvation seem to be synonymous.

### **Ideal Reducing Diet**

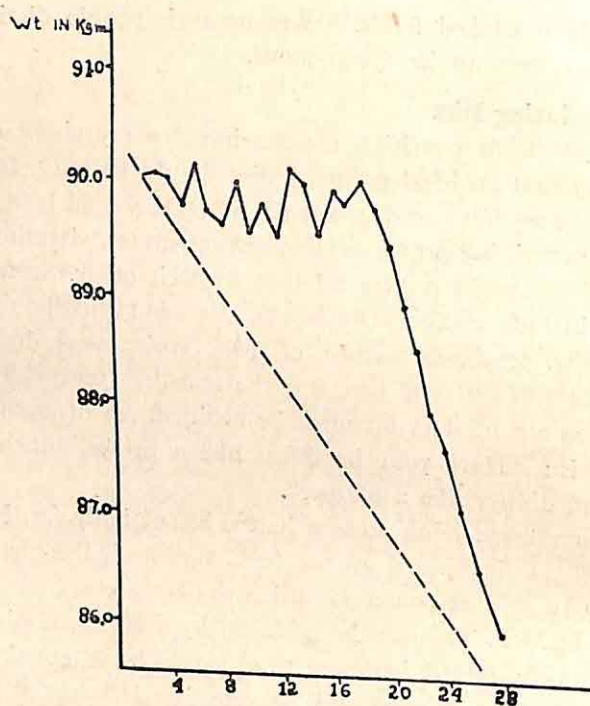
Let us see what nutrition experts have to say about dieting. They say that an ideal reducing diet should be tasty, satisfying and varied so that one does not tire of it. It should be a balanced diet containing proteins, facts, carbohydrates, vitamins, minerals and water, in proper relation to each other. Such a diet should include ordinary foodstuffs, the kind usually taken by the family. It should consist of milk, fruits, vegetables, eggs, cheese, cereals and also fats. But the so-called 'party-dishes', i.e. those that are fried in fat must be avoided. An oft-quoted rule on diet is: "Have your breakfast like a prince, lunch like a king, and dinner like a pauper".

For an average adult to lose half a kg. of body fat, he must lose 3500 calories spread over a week. Calorie is the measure of the amount of heat or energy which the body gets from a given amount of food. This can be achieved by daily consuming food of 500 calories less. A better method would be to cut down the intake of 250-350 calories and by spending 150 to 250 calories more in physical exercise such as brisk walking, running, cycling, swimming, gardening, or playing some strenuous game.

### **Slow initial Reduction**

When one starts dieting, it takes about two weeks before the reduction in weight is noticeable; after this, reduction in weight is steady. It is necessary that this should be known so that beginners do not feel disheartened. A reduction of  $\frac{1}{2}$  a kg. of weight per week is generally considered satisfactory. A more rapid rate of reduction can lead to general weakness.

Other practical suggestions are :



Graph showing loss of weight

1. Eat slowly. In this way the appetite centre in the brain gets satiated before one has taken more food than one really needs.
2. Masticate your food thoroughly. This helps one to make smaller meals more satisfying.
3. Omit a second helping. Some people find it difficult to refuse second helpings when they are dining out. This is due more to lack of will-power and resolution than to politeness.

4. Eat proteins such as meat, cheese, and fish first. With blood sugar then being high, one is not interested in the rest of the meal.

A reduction in weight is only half the job. To maintain the reduced weight is more important and this requires a new regimen of eating habits and firm resolution.

### **Breakfast**

Breakfast needs the greatest attention. People think that a very light breakfast or omitting it altogether, easily reduces weight. Nothing, however, is farther from the truth. A good breakfast keeps blood sugar high and one is not tempted to eat later in the day. A poor breakfast also lessens work output, efficiency, and mental alertness, and causes tremors so that one is more liable to accidents.

### **Reducing Drugs**

Certain drugs have also been used to reduce weight. Amongst them are the thyroid tablets and amphetamine. Thyroid tablets have the initial effect of increasing appetite so that even though the rate of body function and consequent consumption of calories is increased, the increased intake of food neutralizes this effect. Taken over a long period they cause palpitation of the heart, restlessness, irritability, and tenseness. Amphetamine and other similar drugs reduce appetite and in theory are well-suited to reducing weight. But they also cause palpitation of the heart and taken towards the evening they cause insomnia. Taken over long periods the effect of reduction in appetite does not last. So both these drugs and similar ones are not of much use and should not be taken without the advice of a competent doctor.



## 10

### **No Tranquillizers, Relax the Normal Way**

It is much talked about. You come across it at the bus stands. You can see it at 9.30 a.m. and at 5.30 p.m. You can sense it when, on asking the time you are told it is 7-59 and 37 seconds. It is present at business and official meetings, at gatherings and even during a telephone conversation. You see it in the clenched fists and grinding teeth of anger, on the faces of the young and the old, men and women and finally in the doctor's clinic. It is everywhere. It is tension and stress..

#### **Body Reacts to Stress**

How does the human body react to such stress? The tiny endocrine glands, two adrenals situated above the kidneys and a pituitary lying under the brain mainly deal with it. They work overtime and release excessive secretions to combat stress and beat off any threat to the human system. As a result, blood pressure rises, putting an extra load on the heart and the blood vessels. This also leads to precipitation or aggravation of ulcers in the stomach, mental imbalance and a variety of neuroses.



### **Tranquillizers : Pros and Cons**

Modern science has produced tranquillizers for this modern malady of stress. They are of various kinds; the first to appear in the market was Reserpine, an active extract of the Indian plant *Rauwolfia serpentina* or snake root. Then came various phenothiazines (Equanil, Miltown), benactazine (Librium), hydroxyzine (Mellaril), etc.

When these drugs were administered in the laboratory to agitated monkeys and other animals, they quietened and calmed down, became gentle and even playful. Insane patients in lunatic asylums became quiet, less disorderly and it was discovered that these drugs had an overall soothing effect. Even cautious physicians reported the results as 'sensational and miraculous'. This led to their use in the case of people who were under stress, tension, and worry, but were not admitted to hospitals. In some Western countries tranquillizers are now sold in large numbers and are used by frantic, temperamental, overworked, overcharged businessmen, officials, professors, and house-wives. They are now increasingly used in India by the same group of people. The enthusiasts claim several virtues for them : they are harmless, non-sedative, non-habit forming and keep the mind clear.

Over the years, however, a large number of reports have accumulated on the harmful effects of these drugs. In some cases their continued use has led to disturbances of the liver, jaundice, and also damage to brain cells leading to tremors and affecting the movements of the hands. They have caused increased secretions of hydrochloric acid in the stomach which led to the formation of ulcers; nasal stuffiness, skin rash, obesity and other endocrinal disorders have also occurred. And strangely enough, in some cases these drugs have caused just the reverse of

the expected effects, i.e., they caused maniac excitement, or deep depression and melancholy.

At best, tranquillizers only lessen the emotional response to stress and anxiety by lessening the excitability of the hypothalamus, a part of the brain. Those who take them need them increasingly, so that they become addicts. Long usage of tranquillizers can have many harmful reactions in certain cases.

Tranquillizers have been of great use in different types of madness such as schizophrenia, mania, delusions, hallucinations etc., yet they are not the answer to tension, worry and anxiety. The answer lies in changing the habits that give rise to these disturbances.

### **How to Relax**

The first essential is to pinpoint the cause of tension and worry and then to remove it, if possible. Besides that there are a few other general rules. These are :

Talk over your worries with someone in whom you have confidence. Escape for a while from an environment which causes tension and stress.

Do one thing at a time. Do not have 'too many irons in the fire'.

Go easy with the criticism of others and try to understand their point of view. Often people waste their energy on needless conflicts. They are full of resentment, hate, jealousy and envy. These people spend more time in trying to hold back others than in trying to advance themselves.

Make yourself available to other people and do something for others also.

Don't wear yourself out on non-essential activities.

Plan your work.

Plan your leisure.

'Working off' one's tension and stress through muscular work is the most popular way to relax. Tense muscles and a tense mind relax better with physical play or exercise. With some people gardening or painting is very relaxing. "Painting is complete as a distraction. I know of nothing which without exhausting the body, more entirely absorbs the mind", said Churchill.

Remember that whether you are disturbed or calm, tense or relaxed, depends not on external stimuli but on your own response to them.

## 11

### Health Hazards of Smoking

Since Columbus brought to the Spanish court samples of the golden leaf that was smoked 'like a torch' by the 'savages' of the New World, a large number of virtues and vices have been attributed to it. These are essentially based on myths and dogmas intermingled with some correct observations. Till the mid-nineteenth century, in many parts of the world, tobacco leaves were said to possess miraculous medicinal properties. An extract of tobacco was used to treat tuberculosis, sleeplessness, a variety of convulsions, and baldness. On the other hand, there have been many antagonists of tobacco. While in India tobacco was by religion taboo to a particular section of the people, in England King James I, wrote a pamphlet in which he identified tobacco as 'the lively image and pattern of hell' describing its use as 'a custom loathsome to the eye, hateful to the nose, harmful to the braine, dangerous to the lungs and in the black stinking fumes thereof, nearest resembling the horrible stigious smoke of the pit that is bottomless'. Tobacco has been blamed for causing epilepsy, syphilis, insanity, tuberculosis, blindness, impot-



ence and sterility and excessive abnormal growth of hair in women !

### **Current Views**

Even at present, views on smoking are fairly divergent, even contradictory, and not all based on verifiable facts. Today we know more about the chemical composition of tobacco leaves and its smoke, but the properties of one of its important constituents, nicotine, named after the French Ambassador Jean Nicot who introduced Catherine de'Medici to the pleasures of tobacco, still elude scientists.

As regards the effect of smoking on human health, we know for certain that some diseases are more prevalent among smokers than among non-smokers.

Let us have a look at some of these diseases.

### **Chronic Bronchitis**

People who have been smoking for many years get what is commonly called a 'smokers' cough'. Some of them start getting breathless on exertion such as in climbing stairs, catching a bus, or even while speaking. They pass a lot of phlegm after coughing and in the winter these symptoms are aggravated. Gradually as their lungs get progressively damaged, the patients enter the next stage of the disease called emphysema of the lungs, and then they are breathless during normal work or even at rest. What happens is that the smoke irritates the cells that line millions of tiny air ballons (alveoli) in the lungs. The walls of the alveoli thicken, lose their elasticity and also much of their ability to exchange carbon dioxide for oxygen. Subjected to sudden stress, such as coughing, the alveolar walls rupture and so parts of the lungs become useless. Even while the smoke is attacking the alveoli, it also damages the small blood vessels that carry blood to the lungs for oxygenation. The result is a

lack of oxygen and excess carbon dioxide in the body. The heart of such a person tries to compensate by working more vigorously initially, but ultimately it gets fatigued and fails. This is why smoking is hazardous and leads to an early death.

### **Lung Cancer**

Much has been written and said to make people aware of the association between smoking and cancer of the lung. It may be added, that data collected during the past one decade from various hospitals and clinics in India has shown that cancer of the lung, though less frequent than in some western countries, is certainly on the increase. In spite of the fact that so far no complete experimental proof is available to show the cause and effect relationship between lung cancer and smoking, there is overwhelming and unequivocal statistical evidence to show that smoking increases the chances of getting cancer of the lung and that these increased chances are directly proportional to the amount of smoking.

### **Stomach Ulcers**

Tobacco smoke has demonstrable reactions on the stomach and intestines as well. In a normal person contractions of the stomach which are observed when a person is hungry disappear after inhalation of a few puffs of smoke. Heavy smokers seem to have less appetite than non-smokers and those who have given up smoking are known to put on weight.

The effects of smoking on stomach ulcers have been carefully recorded in controlled studies. Hospital patients having stomach ulcers (all smokers) were divided into two groups. Group A was told to stop smoking, but not Group B. Otherwise both received the same medical treatment. It was noted that in patients who continued to smoke, the ulcers actually increased in size, while this deterioration was not observed in any of

those who gave up smoking. These observations show that though smoking does not appear to be the cause of ulcers in the stomach and duodenum, it probably exacerbates and perpetuates them.

### **Coronary Heart Disease**

It has also been observed that coronary heart disease is more frequently the cause of death among smokers than among non-smokers. Those who give up smoking have a reduced incidence of heart attacks.

### **"Smoking Soothes the Mind"**

Let us see whether there is any truth behind the statement that smoking has a soothing effect. When a person smokes, a variety of chemical substances such as nicotine, carbon monoxide, small amounts of hydrocyanic acid, pyridine, various phenols and aldehydes are absorbed through his mouth into his lungs. His whole body reacts to them. The nervous system is stimulated and the person feels mentally more agile. But after a little while as the blood vessels contract and there is a slowing down of all activities of the body, he loses concentration. During this condition, which lasts much longer, if a smoker is emotionally or psychologically stimulated, he gets tense, jittery and nervous. Unless he smokes again, he cannot recover his mental agility and concentration. This is why he thinks smoking is good for the nerves.

If this was all that happened, there would not be much cause for worry. But we have seen that while smoking 'soothes the nerves' it seriously damages the body, more particularly, the lungs.

It is now definite that (as a class) those who do not smoke or have given up smoking enjoy better health and have a longer life than those who smoke.



## Our Tiniest Enemies — The Viruses

Viruses are one of the foremost enemies, not only of mankind but also of animals, birds, and even plants. In human beings they cause the common cold, influenza, measles, chickenpox, mumps, herpes simplex or zoster, pneumonia, inflammation of the brain and its coverings (encephalitis and meningitis), jaundice (Infectious hepatitis), polio, rabies, small-pox and a host of other diseases. Some of these diseases are just a nuisance, while others can be crippling and even fatal. German measles, a virus infection, is known to cause congenital abnormalities of the heart and the eyes of the foetus if the infection occurs during the first three months of pregnancy.

### Incidence

All these diseases occur in India and some of them are quite common. They spread through air, water, and food. There are still others which are caused by the bite of insects. The Chikungunya virus disease is one of them. Akin to dengue fever, another virus disease, it causes aches, pains and fever, and is caused

by the bite of an infection-carrying mosquito. This disease has broken out lately in an epidemic form among children and even monkeys in many parts of India. Another disease caused by the bite of a tick is the Kyasanur Forest disease in which there is inflammation of the brain.

With the suppression, control, or eradication of some of the bacterial diseases with the help of modern miracle drugs, the problem of viruses has come into prominence.

### What are Viruses?

Till about a century ago, diseases were considered to be caused by invisible poisons in the air. With the discovery of disease-producing bacteria, a large number of diseases were found to be caused by them. These bacteria could be seen and identified in various parts of the diseased body with the help of a microscope. There were, however, many other diseases in which no bacterial cause could be established. But it was observed that even in these diseases, if filtered secretions from the patients were introduced in the mouth or nose of the volunteers, they caused the same diseases in them. This suggested that the disease-producing agent was present in the secretion but was too small to be detected by an ordinary microscope and so could easily pass through the filters. This agent was tentatively labelled Filterable Virus. The scientists then set out to define it more clearly.

Taking a cue from the bacteria which were known to grow on the laboratory media or dishes prepared by mixing a variety of biochemical reagents, the same technique was applied to the filtered secretions also. But unfortunately nothing grew on these media.

Failure of the viruses to grow on biochemical laboratory media and their ability to cause diseases in human volunteers

and experimental animals, led the scientist to devise media which consisted of live cells from the susceptible tissues of the experimental animals. The viruses infected these cells and caused lesions similar to those caused in infected animals. They grew even in a live chick embryo and its various coverings.

A new direction in the study of viruses was provided by physicists. They showed that a collection or beam of electrons, one of the constituents of the atom, could be focussed on tiny objects and as this beam was deflected or blocked, it threw an image of that tiny object on a screen placed in the path of the beam. This formed the basis of the Electron-microscope, with the help of which many of these tiny viruses even as small as 10 millimicron (a millimicron is a millionth part of a millimetre) could be seen. To get a three dimensional image of the different viruses they have even been 'gold-plated' by different techniques and observed under the Electron-microscope.

Viruses could now be seen, recognized, and reproduced. And for experimental purposes, large collections of viruses could be produced in the laboratory. The field was now open for studying and controlling virus infections as was done earlier with bacteria.

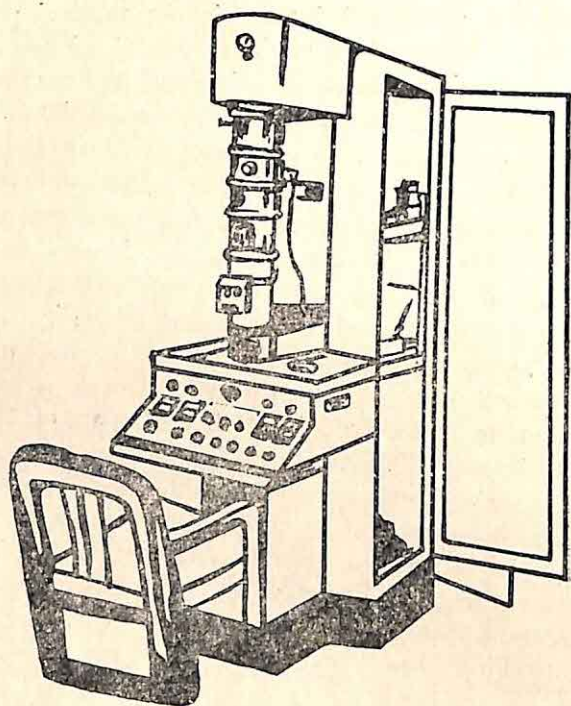
#### **Have Virus diseases really increased in frequency?**

Perhaps not. We are now recognizing more virus diseases which we were not equipped to do before. We are now beginning to understand that many bacterial diseases, such as those of the throat, are not primary but secondary infections superimposed on a throat that had been primarily damaged and made susceptible to secondary bacterial infection by a primary virus disease.

#### **Can we cure a virus infection?**

No, not yet. We cannot cure small-pox, rabies, encephalitis, in-





Electron Microscope

fectious hepatitis, measles or even the common cold. We do not have the drugs to kill a virus once it enters the cells of the human body. Viruses cannot be killed the way penicillin kills bacteria. Bacteria are present either in the blood stream or around the cells but viruses reside inside the cells. Bacteria attack the cells from the outside; a virus does that from within.

If we try to kill a virus, we have to kill the cell also and therein lies the problem of the treatment of virus diseases.

### **Can we prevent Virus Diseases?**

Yes, in many cases; and this in itself is a fascinating story. It had been observed that if a person had small-pox once, he never got it again. He was protected or immunized against it. In India, China, and other older civilizations, the powder made out of the crusts that fell from small-pox lesions was inhaled by people in order to get a mild small-pox infection and be protected against contracting this disease. Occasionally this led to a severe attack of small-pox which sometimes proved fatal. In other cases, it led to a small-pox epidemic if the person did not remain confined within the four walls of a room. Later on, instead of the inhalation of the powdered crusts, a thread was dipped in the secretion of the small-pox lesion and medical practitioners of those days moved from town to town to immunize people by scratching a part of the body with a knife and rubbing the scratched surface with the soiled thread. This was also dangerous though less so than the first procedure.

### **Vaccination Against Small-pox**

A revolution in small-pox immunization was created by Jenner, an English physician. He put into practice the old women's observation that if a person developed cowpox, he was protected against small-pox for life. Cowpox was a much less virulent disease which generally affected the teats of the cows and was transferred from there to the hands of the men or women who milked them.

Jenner vaccinated with the cowpox fluid thousands of people in many countries and, in fact, after his discovery he spent the rest of his life in vaccination work. Even during his lifetime there were others who undertook this task. Vaccination was dis-

covered only about a hundred years ago and since then it has saved millions and millions of lives.



Jenner vaccinating his son

### Inoculation Against Rabies

Vaccination against small-pox set the pace for immunizing the population against other virus diseases. The next disease to be tackled was rabies. Caused by the entry of a virus from the saliva of a mad dog into the wound caused by the dog bite, the disease is incurable once its symptoms have appeared. There is, however, a long period between the mad dog's bite and appearance of the symptoms of the disease. Rabies being not a very common disease, protection of the whole population is unnecessary. Louis Pasteur, a medical scientist, thought of protecting only the bitten person against the appearance of the disease,



and for this purpose he utilized the long incubation period of the disease. He inoculated the bitten person with various secretions of the mad dog including the dog's saliva but without any success. In the meanwhile, it had come to be known that rabies affected the nervous system of the dog, and so the virus must be present over there. Pasteur took out the spinal cords from many mad dogs and dried them for a period of one to fourteen days in different specimens. The idea was to weaken the virus so that an injection of it could produce immunity without producing the disease. After he was thus prepared, he let a mad dog bite a laboratory dog. He then injected the bitten dog daily with the spinal cord suspensions from the mad dogs, starting with the 14-day-dried specimen and gradually coming down to inoculation with the fresh one on the last day.

The bitten dog survived. The same procedure was then tried on human beings bitten by mad dogs. They too survived.

Methods of immunization against small-pox and rabies, crude though they may look to us, were the only methods available at that time. They proved effective then and are still in use. They, however, carry a risk because these vaccines contain in them the tissues of the animals on which these viruses grow. Occasional adverse effects of these vaccines are due to the presence of those tissues as the vaccines are not made of pure virus. Now that newer techniques of growing viruses in the laboratory in large quantities have been developed, vaccines made out of pure viruses are being used.

### **Polio Vaccine**

The first disease against which a pure virus vaccine was prepared was polio. This disease is much more prevalent than the incidence of consequent paralysis suggests, for it has been found that paralysis is rare in this disease. In India by the age of three

years, more than 95 per cent of children contract this disease which either causes no symptoms at all or merely causes a stomach upset or a cold in the throat and slight fever. Paralysis in polio is more common when it infects comparatively older persons, as happens in more developed and hygienically cleaner countries. So it is more of a problem for the cleaner and affluent areas of the world. It may be that in a few decades, it will become a similar problem in India also.

To immunize against polio, killed polio virus injections were prepared and given in the beginning. Today weakened but live virus vaccines, which are taken by mouth like sweet candy, are preferred in India and many other parts of the world.

### **Epidemic Jaundice**

Another virus disease of which we have had a few epidemics lately in different parts of India, particularly in Delhi, is infectious hepatitis which causes jaundice. Here again infection is very frequent, but jaundice does not occur in all infected cases. No vaccine is yet available against it because the virus that causes this disease has not yet been grown in the laboratory. More susceptible people such as doctors and nurses, or those who are liable to suffer more if attacked, such as pregnant women, can be protected by giving gamma-globulin, a fraction of the plasma, from patients who have already had this disease. It needs a lot of human blood to prepare one dose of gamma-globulin.

### **Influenza Vaccines**

Influenza, of which there was a world-wide pandemic less than a decade back is one of the diseases caused by viruses which change their structure frequently so that an influenza vaccine is only effective if it is prepared from the same strain of the virus that is going around currently. For this, world-wide

collaboration is necessary so that no time is wasted in the isolation of the virus and in preparing vaccine. Happily this was achieved during the last pandemic which started from the Chinese mainland and spread throughout Asia and travelled to the U.K., Europe and North America.

### **Common Colds**

The commonest virus infections are the common colds. The name suggests that the disease may be caused by exposure to cold but this is a myth. There is not one virus that causes cold but dozens of them. No virus vaccine is yet effective against the common cold, also no drug is available to cure this ailment. The oft-quoted statement that an 'untreated cold lasts for seven days and a carefully treated one for a week' still holds true.

Vaccines against other virus diseases such as measles and acute infections of the upper respiratory tract are being made available gradually. A lot of money and talent is being utilized currently in the best equipped laboratories of the world to find out more about the tiniest of our foes, the viruses. The crucial problem is to find a drug or a technique that would kill the virus in the cells of the body without harming the cells themselves. A Nobel Prize and the immense gratitude of mankind awaits the discoverer of such a cure.



## 13

### Menace of Allergies

#### Case Reports :

(1) When he attended the clinic, Ravi aged eleven years was panting for breath. He had been in this condition for the past two days. With appropriate treatment, he was relieved of this attack of breathlessness (status asthmaticus) within an hour. His mother related that at the age of three months, Ravi had developed oozing rash (eczema) over the face and this had lasted for about a year. After this he started getting an occasional cough and wheezing, but they did not attach much significance to this. Two years later at the change of season in March, after having had a cough for a few days, he got a severe attack of wheezing and breathlessness. Since then almost every year, in March-April, there were such attacks, but this year they were exceptionally severe.

(2) Neelam, aged twenty-two, had an attack of sneezing and a running nose. She had sneezed all morning and had soiled over half a dozen handkerchiefs. The attack of sneezing had begun about a week back and this was the third year of such



attacks. These occurred only in April, and in the other months of the year she remained perfectly normal. She was suffering from what is commonly called Hay fever.

(3) Vijay six months old, was a plump and very healthy baby. He was weaned and put on tinned powdered milk. Fifteen minutes after taking the first feed of this milk, he developed a severe cough and wheezing in the chest. With every subsequent feed, he got similar attacks of cough and wheezing. He was diagnosed to be allergic to milk and this was proved by the fact that his symptoms abated when milk was omitted from his diet.

(4) Rohit, aged one, was given a half-boiled egg. Half an hour later he developed such a severe pain in the abdomen that he could not lie in bed. An injection by a doctor brought him relief in fifteen minutes. He was allergic to eggs.

(5) Bandana, aged ten years, noticed that since the last six months, whenever she ran or played any active game, she itched all over and this disappeared only when she stopped playing.

Seghal, aged forty years, had more or less similar trouble. He would get urticaria i.e., itching and swelling of the skin, after bathing in cold water. Hot water baths caused no trouble.

And there was Arora, aged fifty-five years, on whose back even a slight scratch with a finger nail caused the skin to swell up.

(6) Surinder, aged twenty-two years, gets an itch in the eyes, only during change of season, for the last six years. His mother gets asthma at about the same time.

(7) Satish changed the strap of his watch because it had worn out. A few days later he noticed that he had developed a rash on the skin beneath the new strap. It was later found that the new strap had nickel in it and Satish's skin was allergic to it.

(8) Mrs. Khanna had a boil on her leg for which she was prescribed 5 penicillin injections. Ten minutes after taking the first injection she fainted, had breathing difficulty, and turned

blue. Timely help and the presence of mind of the attending doctor saved her from a near-fatal condition. Afterwards it was learnt that when she had taken penicillin injections previously, they had caused her body to itch. Mrs. Khanna was severely allergic to penicillin.

(9) Mrs. Malik, aged fifty, got an attack of wheezing two years back which lasted for a week. Since then she had such attacks occasionally. Sometimes the wheezing would appear and disappear in a few minutes. She noticed that whenever she went to the house of a particular relation, she invariably started wheezing. Then it struck her that she was allergic to cats, whose presence she could immediately detect.

The above patients had different complaints and troubles. But they had one thing in common. They were all allergic, though to different things.

Allergic disorders are very common. It has been estimated that roughly 5 to 10 per cent of people suffer from allergy.

### **What is Allergy ?**

Allergy is the altered reaction of the whole body or a part or organ of the body, to a particular thing. The person who exhibits such hyper-reactiveness is called allergic and the thing to which he is hyper-reactive is called an allergen or an antigen. Thus while most people do not get any reaction after taking milk, egg, or coming in contact with nickel, or after a penicillin injection or on seeing a cat, an allergic patient gets a variety of symptoms after coming in contact with any thing to which he is allergic.

Every untoward reaction to a substance, however, is not an allergic reaction. For instance, the normal dose of quinine is 10-30 grains, but some people get a buzzing in their ears even after taking 2-3 grains. They react severely to a smaller dose

while generally the same kind of reaction is produced by a heavy dosage. The difference is only quantitative. This is not an allergic reaction. Similarly certain articles of diet such as fried food do not agree with many people but that is not an allergic response. Again most people get a few sneezes or irritation in the nose or throat when they are exposed to irritating chemicals or dusts. This is the result of mechanical irritation. Most people do not have any reaction after taking penicillin, but a person allergic to it has an adverse, often fatal reaction even with a minute dosage.

### **Is Allergy Inherited?**

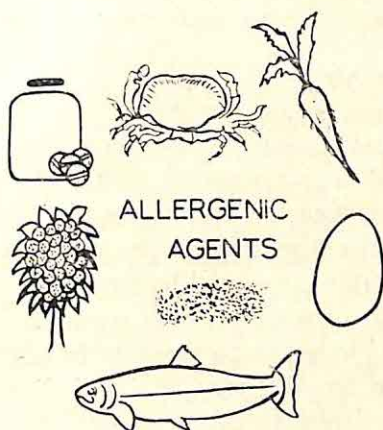
An allergic constitution may be inherited, but not a particular manifestation of allergy. Thus a mother may have asthma and her daughter may inherit her allergy, but instead of having asthma she may have eczema. No amount of drugs or any other treatment can change an allergic constitution. In certain families, many male members get bald as they grow older, in others a majority of the members have to wear glasses for short-sightedness. They can't do anything to avoid it. The same is the case with allergy. If a person does not like it he should have chosen the right type of parents and perhaps grand-parents too! Though an allergic constitution is unchangeable, much can be done for allergic diseases and their symptoms.

### **Cause**

People with an allergic constitution have a tendency to make antibodies against some particular substance with which they come in contact. Production of these antibodies then continues and they collect in the blood or in some particular organ of the body. Once a sufficient stock of these antibodies has been built up, any subsequent entry of the allergen is extremely hazardous because the antibodies react with the antigen and produce a



kind of miniature explosion either in the blood or in the cells of various tissues. This leads to a release of a variety of substances such as histamine, serotonin, bradykynin, slow-reacting substance etc. It is these substances which cause the appearance of the symptoms of asthma, urticaria, etc.



### Allergens

That certain people react severely to an innocuous substance is an observation embodied in the old saying, 'one man's food is another man's poison'. There are scores of substances to which people are allergic. They are the pollens of various plants, spores of different moulds, house dust, dander and even minute parts of insects which float in the air and enter the body through breathing. It is interesting to note that pollens of ornamental flowers are generally not allergenic and they do not float in the air as they are relatively heavy. Allergenic pollens usually belong to the inconspicuous flowering grasses, weeds, shrubs or even trees, are very light and are carried in the air for long

distances. Other allergens are some articles of diet and certain chemicals which come in contact with the skin. One can be allergic even to bacteria or worms in the intestines or to a particular constituent of one's own body.

A person can be allergic to one or more than one substance. Interestingly enough, one may be allergic to one thing now, get over this allergy, and become allergic to some other thing.

### **Allergens in the Air**

Detection of the allergens present in the air in a particular area is a long and tedious process. To tell you briefly, the specialist exposes glass-slides covered with sticky vaseline or jelly on roof-tops in various localities of the city. He examines these slides daily under the microscope and sees which pollens, moulds or other substances, and how much of them, collect over the slides. He does this all the year round. And on the basis of these observations, he prepares what is called a pollen and mould calendar for the area, which indicates the allergens around in a particular month or season.

### **Allergens in a Patient**

Some patients know what they are allergic to, but the majority do not, and it is the job of a specialist to detect these allergens for them. Let us see how he works this out. He first asks the patient the story of his illness and this provides important clues. A patient may have symptoms only in a particular month or season. He may have them only at his place of work and not in his house. He may have symptoms only during day and not at night. He may have the symptoms in one city or area and not in another. He may have them only when he is tense or is very fatigued. These and many other similar points are very helpful in locating the offending allergen. A patient must tell his doctor almost every relevant fact even if this might appear absurd to

him. I remember a young man who said very hesitatingly that he had noticed a rash on his fingers each time he met his girl friend in a particular restaurant. Examining the case further, we found that our patient used to dance there with his girl friend and she used a nail polish to which he was allergic. The patient's observation was correct, and if he had not volunteered this statement, the cause of his skin rash would perhaps never have been discovered.

If the case history provides some leads, then the doctor tries to confirm them by carrying out certain skin or patch tests or by eliminating the alleged allergic article of food from the diet of the patient to see how the patient reacts.

If a patient comes and tells the doctor that he gets the symptoms only, let us say, in the month of March and in no other season, he looks up his calendar and sees which pollens or moulds are present in March. If previous history provides no clues, then the doctor has to test the patient against all possible allergens. He takes the extracts of these very pollens and tests the patient's skin with them. A positive reaction in the form of swelling or redness around the injection site generally indicates that the patient is allergic to it. Interpretation of the tests, however, is a very technical procedure and only a good allergy-specialist is capable of doing this as these tests have to be correlated with the history of the patient.

## Treatment

### *Specific*

After it has been found that the patient is allergic to particular allergens, the best treatment is to avoid those allergens. If they are articles of diet or things that come in contact with his skin, then these can be avoided. But if they are present in the air, their entry into the body cannot be avoided.



In such a situation the second best course is adopted. This is to make the patient less sensitive to the action of allergens, so that even if he is exposed to them he does not develop the symptoms. This can be done by a process called Hyposensitization. The patient is given injections of gradually increasing concentration and dosage, of the extracts of the allergens to which he is sensitive. These injections are preferably given pre-seasonally i.e., a month or so before the season of the onset of symptoms in the patient. They are either continued throughout the year or stopped when the season of the symptoms is over. An allergy-specialist is the best judge to decide the course of action to be taken for a particular patient. These injections are continued for more than a year and sometimes even for many years, but the frequency of the injections is decreased. Many patients are cured of their symptoms by this method, but some do not show much improvement. Success of this method depends to a large extent on the correct detection of all the allergens.

Attempts have been made over the past few years to dissolve the allergenic extracts in oils or to prepare chemical precipitates of them so that it takes a long time for them to disperse from the site of injection and they form a kind of stock from where they are drained off gradually. The idea is to lessen the need for more frequent injections. Some success has already been achieved in this.

### *Symptomatic*

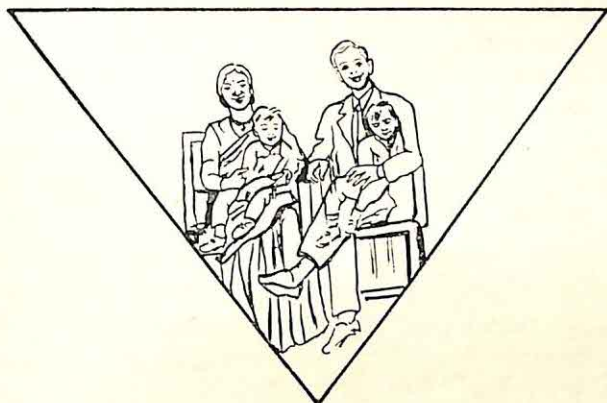
Treating allergic symptoms is very necessary because they cause much discomfort. Even those who undergo hyposensitization need symptomatic treatment occasionally. This, however, becomes the only line of treatment for patients in whom allergens cannot be detected by any means.

During the past two decades, synthetic hormonal preparations

of the adrenal cortex such as cortisone, prednisolone, and allied drugs have helped considerably in providing relief from all types of allergic symptoms. The discovery and use of anti-histamine preparations have helped in urticaria or attacks of sneezing. Anti-histamines, however, are of no help at all in asthma. These newer drugs are used only when the older, tried ones do not give relief. Ephedrine, aminophylline, or adrenaline are still the back-bone of treatment for asthma.

Even though there is still much more to be known about allergic conditions, the progress made during the past decade has considerably improved the outlook for treatment of allergic patients.

## Family Planning and Contraceptives



*"In a hunger stricken country like India, it is a cruel crime thoughtlessly to bring more children into existence than could be taken care of, causing endless suffering to them and imposing a degrading condition upon the whole family".*

*—Rabindranath Tagore.*

### Increasing Population

At present, there are over 550 million people in India and an additional million are being added every month or 12 million each year. At this rate of increase, there will be 1000 million people, a little more than double the present number, in 30 years from now.

Between 1921 to 1930, the rate of increase of population was about 11 per cent, between 1931 to 1940 it was 13.5 per cent,



and between 1941 to 1950 it was 14 per cent. It jumped upto 21.6 per cent between 1951 to 1960. Thus we see that the rapid increase of population is a relatively recent phenomenon.

This increase of population is due mainly to a spectacular decline in the death rate. The use of antibiotics, improvement in sanitation, and the effective control of some endemic and epidemic diseases such as malaria, cholera and small-pox, have brought down the death rate from 40 per thousand in the twenties to only 17 in the sixties. While the expectation of life was only 27 years in 1920, today it is 50 years and is likely to rise even further.

Interestingly enough, the birth rate during all these years has remained virtually unchanged. The figure of 41 births per thousand of population per year, though higher than some Western countries, is nevertheless lower than that of many Eastern ones.

The population problem is thus not due to a rise in the birth rate but to a decrease in the death rate. This problem can, however, be solved only by reducing the number of births, because a fall in the death rate and a longer life span is to be welcomed.

India is poor and will remain so if there is a rapid increase of population, with more people in the dependent age groups to feed, clothe, and house. This nullifies all efforts to raise the standard of living in the near future.

Moreover, frequent childbirth and large families are a great strain on the mothers. This endangers women's health and even their lives. About two-thirds of all deaths among women in the reproductive age group in India are even now due to causes connected with pregnancy and childbirth.

### **Family Planning Programme**

The idea of Family Planning by birth control was envisaged

by Margaret Sanger in the U.S.A. (she coined the expression as early as 1912). During those days the expression, 'birth control', and any information on contraception was considered pornographic, and in some cases was even punishable.

In India, there has been practically no public controversy, religious or otherwise, about Family Planning. The first (in the world) Government-operated birth-control clinics were opened in India in the cities of Bangalore and Mysore in the year 1930. In 1935, the National Planning Committee set up by the Indian National Congress, under the Chairmanship of the late Prime Minister Nehru, strongly endorsed Family Planning as an official policy. India was the first Government in the world to adopt Family Planning as a national policy in 1952.

The objective of the Family Planning programme is to bring about a reduction in the birth rate from the present figure of 41 per 1000 per annum to 25 as soon as possible.

### Contraceptive Techniques

Studies conducted in various parts of India show that about two-thirds of all married couples want a limited number of children at intervals of three to four years. But the majority of them do not know how to achieve this.

The different methods available for preventing births can be categorized as follows :

- I. Methods which need no appliances. These are :
  - a. *Rhythm method*
  - b. *Coitus interruptus*.
- II. Methods which need mechanical appliances such as the use of condoms by males and diaphragms by females.
- III. Chemical methods using foam tablets.

IV. Surgical methods, such as :

- a. *Sterilization of males and females.*
- b. *Induced abortion.*

V. Use of newer contraceptives such as :

- a. *Oral pills.*
- b. *Intra-uterine contraceptive devices (IUCD).*

I. a. *Rhythm Method*

Ovulation or shedding of the female eggs or ovum from the ovaries occurs generally between the thirteenth to the seventeenth day after the onset of menses, in a twenty-eight day cycle of the menstrual period. The ovum survives for about a day. If sexual intercourse is avoided from the tenth to twentieth day after the onset of menses, the chances of conception are minimal. Though this method is practised by many couples, it is not always successful because of the irregularities of the menstrual period of many women. Illiterate women, particularly in villages, find it very difficult to keep count of the calendar.

b. *Coitus Interruptus*

Here the husband refrains from making spermatoc discharge into the wife's vagina. This is practised to some degree in most societies. In Western European countries, it is one of the most popular methods. Around two-fifths of the married couples in the United Kingdom and one-third in Denmark and Sweden are said to practise this method. In Greece it is said to be the most widely practised. Several studies in India also indicate the use and effectiveness of this method.

II. Use of Mechanical Appliances

A condom made of thin rubber or latex is used by many men. It is effective so long as it does not leak because of a crack or a pin hole in its surface.



A diaphragm, with a sperm-destroying jelly, can be fitted into the vagina at the time of intercourse. It has been used and accepted by many women. Lack of privacy and of washing facilities in many poor Indian homes sometimes makes its use difficult.

### III. Chemical Methods

Vaginal foam tablets or foaming liquid, which kill the sperms as they come in contact with these chemicals, can be used as a contraceptive. Sometimes, however, they do not prove effective. If these tablets are not stored properly, they deteriorate and have been known to cause a burning sensation on use.

### IV. Surgical Method

#### a. *Voluntary Sterilization*

This particular method, called Vasectomy in males, has been popularised in India. Cutting off of the small sperm-carrying tubes (vasa efferentia) in the region of the groin is a minor operation, and affects neither sexual desire nor sexual potency. Some skilled surgeons have even been able to restore fertility to people who had undergone a vasectomy operation earlier.

For females, sterilization is a more lengthy operation requiring hospitalization. It can, however, be conveniently performed a few days after delivery.

#### b. *Induced Abortion*

This has played an important role in reducing the birth rate in some countries, especially in Japan, where the number of abortions a few years ago was almost equal to the number of births. In some Eastern European countries too, abortions have become very common.

At present induced abortions are illegal in India except when the life of the mother is in danger. It is, however, known that a large and increasing number of abortions are resorted to ille-

gally. Inducing abortions by any means except under the strict supervision of a competent doctor can and often does prove dangerous, even fatal. Amateur abortionists in India are a menace to society.

#### V. Newer Contraceptive Methods

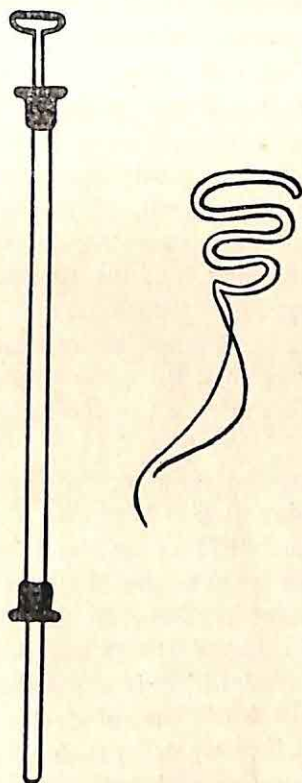
Doctors and scientists have long tried to develop a birth control method which would be safe, simple, inexpensive and could be used in all conditions, even by the illiterate who in fact need it most. Knowledge of the normal physiology of reproduction was helpful in this search. It was known that as soon as a fertilized ovum begins its growth in the uterus, the body increases the production of a hormone called progesteron, one of whose functions is to stop the production of ova throughout the period of pregnancy. Dr. Pincus of Worcester Foundation, U.S.A. used this hormone in experimental studies and inhibited the release of ova from the ovaries even in non-pregnant animals. Later he used and perfected a similar chemically manufactured hormone called 17-alpha-ethyl estranenolone in the form of a pill to be taken by mouth, which prevented the production of ova in normal female volunteers. If these pills are taken once a day for twenty days in a month, conception does not occur because there is no ovum available for fertilization. In India studies are being conducted on similar pills derived from vegetable sources.

This method has become very popular in many Western countries firstly because the side effects observed over a short period are few and minor, such as nausea, breast pain, or a little bleeding in some cases, and secondly fertility can be restored within a month if the pills are discontinued. Longer observations, however, have revealed that these pills can cause

thrombosis (block) in the veins, and perhaps an increased tendency to breast cancer.

### **Intra-Uterine Contraceptive Devices (IUCD)**

An important landmark in the history of contraceptives is the recent use of suitable intra-uterine devices. Such devices made of silver and stainless steel were used in the past in Germany,



Lippe's Loop and Inserter



Austria, and other countries. Non-reactive and harmless plastic and polyethylene materials, however, are of recent origin and have been used extensively in Israel and Japan.

Scientists and doctors are convinced that IUCD will prove more suitable and useful than even the very successful birth-control pills. These IUCD come in various shapes such as the spiral, bow, ring and loop. The loop made of polyethylene is shaped like two letter S-forms joined end to end and is about one and a half inches long. Two short nylon threads are fastened to one end.

To insert the loop, the doctor pushes it into a plastic tube about as big as a soda straw, forcing it to assume a straight linear shape. Then he gently guides the tube through the opening of the cervix into the uterus. Thrusting a slender plunger into the exposed end of a straw-like inserter, he pushes the device out of the tube and into the uterus. There it assumes its original loop shape.

IUCD is advised to be inserted either during or immediately after the menstrual bleeding. In women who have not yet given birth to children, this device is not recommended because their uterus is too small.

IUCD is said to prevent pregnancy by interfering with fertilization in the fallopian tube where the male sperm normally meets the female ovum. It also over-stimulates the small muscles of the fallopian tube so that the fertilized egg descends very rapidly and does not get implanted in the uterus.

The major advantages of IUCD are that this is the only method of birth control which is a simple medical procedure and yet a continuous birth control device. It also permits a simple return to fertility when so desired, as it can easily be removed. It is inexpensive and it is remarkably reliable. The insertion of the device requires neither any anaesthetic nor any

preparation. A pre-insertion check up is also useful in detecting cases of inflammation or cancer of the female reproductive organs. If its user returns to her physician after a month, then after three months, and thereafter annually for a check-up to ensure that the device remains in place, there is little chance of conception. Even without such check-ups, its effectiveness is estimated to be 97 per cent.

IUCD fails to be retained in the uterus of about 10 per cent of women. In most such cases, involuntary contractions of the uterine muscles expel the device. The thread attached to the loop, which protrudes slightly from the cervical opening, enables the woman to check whether the device has been retained or expelled. About three-fourths of the expulsions are easily noticed by the women themselves. In half of such expulsions, the device will remain in place if it is reinserted. In some cases the uterus refuses to accept such a device for any lengthy period, so that other alternative contraceptive measures are indicated. In addition to involuntary expulsions, the IUCD has to be removed in another 10 per cent of women because of complaints of pain or bleeding.

At present there is no other method of birth control less troublesome and more effective and acceptable than IUCD.

The acceptance of IUCD has been amply demonstrated by its trials in various parts of India. When a trial with this device was started in Madurai in Madras, women in rural areas stopped the hospital ambulance on the road to ask for the device. During a similar trial at the Lady Hardinge Hospital, New Delhi, the demand grew so large that doors had to be closed and many clients turned away. In an enquiry made among five hundred women at Family Planning clinics in Bombay, more than half of them expressed a desire to use this method. In a recent article it has been reported that dissemination of detailed information

on this method in one or two villages near New Delhi resulted in women from neighbouring villages flocking to the dispensary.

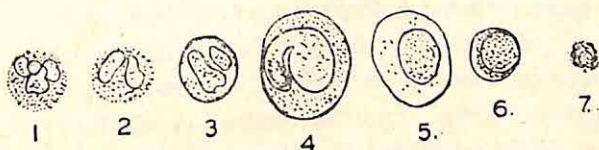
Luckily, there are many methods of birth control now available, so that one can pick and choose according to individual need and suitability.



## 15

### Donate Blood Cheerfully

Anyone who knows how quickly blood forms again in the body, would donate it cheerfully and with an infectious smile on his face. But first let us see what is blood.



1. POLYMORPH 2. EOSINOPHIL 3. BASOPHIL  
4. MONOCYTE 5. LARGE LYMPHOCYTE  
6. SMALL LYMPHOCYTE 7. NORMAL RED CELL

Blood Cells

**What is Blood ?**

It is made up of a fluid medium called plasma in which are sus-

pended three different types of tiny cells, namely, the red and white blood cells and platelets. These three types of cells differ in colour, size, shape and function. A single red blood cell (RBC) is slightly reddish giving blood its colouring. It carries haemoglobin in it which performs the function of carrying oxygen from the lungs to different parts of the body. White blood cells collectively look white and their function is to destroy foreign intruders and to protect the body. Platelets help in sealing injury so that only the minimum quantity of blood is lost. All these cells constitute roughly 40 per cent of the blood. Plasma, besides providing a medium of transport to the cells, contains in it the necessary nourishments for various tissues of the body. These are glucose, proteins, fats, vitamins, minerals and also the enzymes, hormones, antibodies etc. Plasma constitutes roughly 50 per cent of the blood. An average man has about 5 litres or a little over a gallon of blood in his body and a woman just about a gallon. Only about one-third of a litre (300-400 c.c.) of it is taken out at the time of donation.

#### **What happens when we donate blood?**

Even as one is donating blood, different compensatory mechanisms come into action to make adjustments. There is a constriction of the blood vessels so that automatically less blood is needed to fill them. Blood from those parts of the body which can do with less, such as the skin, muscles etc., is squeezed out to fulfil the needs of vital organs like the brain, heart and kidneys. More fluid from the tissues flows into the blood vessels compared to that which goes out. With the help of these adjustments, blood pressure and the pulse rate remain almost the same after the blood donation as they were before.

These are, however, make-shift adjustments done in a hurry. Loss of important constituents of the blood such as the plasma

proteins and the red blood cells has still to be recouped and that takes a little more time.

### **Regeneration of Blood**

Proteins of the blood such as the albumin, globulins, prothrombin and fibrinogen begin to be manufactured at an accelerated rate within a few hours of the blood donation. These are formed mostly in the liver from the food that we take, so that their pre-donation level is reached within a few days, certainly in less than a week.

RBC and other cells which are formed mainly in the bone marrow take a little longer time. After the first week of donation, an increased number of RBC's appear in the blood as is sometimes seen by the presence of immature forms of them, the Reticulocytes. Within three to four weeks of the blood donation, the loss of RBC's and their haemoglobin is fully made up.

Within less than a month the donated quantity of blood is fully replaced.

Normally, blood donations are not accepted more than twice a year. There is, however, no evidence to show that even twice this frequency is in any way detrimental to the health of donors. This has been proved in those who donate blood frequently, because they receive payment for their donations.

While blood donations and subsequent transfusions have saved hundreds of thousands, perhaps millions of lives so far, the procedure had its own aches, pains, and bitter experiences in the earlier developmental stage. You might be interested in knowing how the idea of blood transfusion developed.

### **Story of Blood Transfusion**

Harvey's discovery of the circulation of blood in the body in the seventeenth century paved the way for the idea of transfusion of blood. Initial attempts were made in animals, from dog



to dog or from a lamb to a dog. It was given directly from the vein of the donor animal to the recipient animal through a tube. Later, during the seventeenth and eighteenth centuries, blood transfusions were given not only from man to man but also from animals to man. Many such transfused people died. But many survived and some of them made remarkable recoveries with the result that interest in blood transfusion was maintained.

Interestingly enough, blood transfusion in those days was not given for acute loss of blood. The cure of mental disorders such as mania and melancholy was the main object. Other objectives were rejuvenation, alleviation of chronic, far-advanced lung and bowel diseases, itch, epilepsy, and fistulas. The phlegmatic constitution of a person was corrected with blood transfusion from a choleric person. Even marital discord was settled by reciprocal transfusion of the blood of the husband and wife. The practitioners of this art even speculated that a dog transfused with sheep's blood would eventually grow wool, hoofs, and horns!

During the nineteenth century, blood transfusions were tried in women who had lost a great deal of blood during delivery. Various instruments were evolved for speedy transfusions and a good deal was learnt about the functions of blood and the indications of blood transfusion. Such transfusions led to good, bad, and indifferent results.

In 1901, Landsteiner came forward with his revolutionary discovery of different blood groups in human beings. He showed that only blood of the same group as of the recipient could be given, otherwise it could lead to the destruction of the RBC's in the blood which could even prove fatal. Later another major hurdle, that of clotting of the donor's blood before it was given to the patient, was overcome by the discovery of a variety of anticoagulants. By the time of the First World War, the proce-

cedure for blood transfusion had become more or less standardized and it helped in saving many lives.

BLOOD	INDIVIDUALS IN EACH GROUP (PERCENT)	ANTIGEN FOUND IN RED CELLS	ANTIBODIES FOUND IN THE SERUM
AB	3	A & B	NONE
A	42	A	ANTI-B ( $\beta$ )
B	9	B	ANTI-A ( $\alpha$ )
O	46	O	ANTI-A & ANTI-B ( $\alpha$ & $\beta$ )

### Blood Groups

Today, besides transfusion of the whole blood, individual constituents of the blood are also given in cases of burns and certain blood diseases in which there is an absence or deficiency of some particular constituent.

With these modern discoveries of the use of blood and its constituents, increasing quantities of blood are required by blood banks for immediate availability for patients or to process it further for various other uses. Various blood substitutes which have been developed and used over the past several years have proved very effective, but still there are conditions where only human blood can save the life of a person.

## What do we know about Cancer?

To many people, a diagnosis of cancer is a death warrant. This is far from the truth. The latest advances in the field of early detection and treatment of cancer are very encouraging. At present, even though we do not know how to cure all types of cancer, the lives of two out of every three cancer patients can be saved or at least prolonged. Below are some facts about cancer in general and of its various types and their prevalence in our country.

### **Incidence**

Roughly speaking 85 new cases of cancer are recorded every year per 100,000 people or approximately 467,500 new cases of cancer per year occur in India. Of all parts or organs of the human body, the alimentary tract, from the mouth down to the anus, is most liable to get cancer. Interestingly, while 75 per cent of all cancers in males in India are located in the alimentary tract, in particular the mouth, throat, and oesophagus, in females 60 per cent of all cancers belong to the genital organs and the breast.



If we take into consideration the different age groups, the overall incidence of cancer is more or less the same everywhere though certain organs are involved more predominantly in some countries than in others. It is, however, important to keep in mind that as cancer generally occurs in the older age groups, more cases of cancer are reported in countries in which a majority of the people live to a ripe old age. It is thus understandable that as the human life span increases in India (today it is roughly fifty years), more cases of cancer will be observed here also.

### **What is Cancer ?**

As the human body grows from infancy to adulthood, the cells belonging to different tissues and organs divide and subdivide until no more increase of the cells is required except for the normal wear and tear of the body. Normally the rate at which an organ should grow and when it should stop growing is under the control of the body itself.

Cancer cells on the other hand, refuse to stop multiplying and continue to increase in number even at the cost of other normal cells of the body which are starved to death for lack of nutrition. Cancer cells are also different from normal cells inasmuch that they do not perform any function of the organ to which they belong. They are, in fact, vagabonds who do not care for others and let them die for their own selfish uncontrolled growth. And they do not remain confined in one part of the body. They penetrate and infiltrate into the adjoining tissues and dislocate their function. Some of the cancer cells get detached from the main mass and travel by blood and lymph streams and form fresh colonies called metastasis or secondary growths in other organs where they grow at the cost of the nor-

mal cells. This is how they destroy the well-regulated functioning of the body and bring about its end.

The rate at which a cancer grows depends on the tissue in which it occurs and also on the inherent character of the type of cancer. Rapidly growing cancers and those which send metastasis in other organs are much more dangerous. Sometimes the primary cancer grows slowly, as for example, that of the stomach so that it remains unnoticed while the secondaries spread rapidly in the abdominal lymph glands, liver, etc., and it is these that are first noticed.

Growth of cancer cells leads generally to formation of a nodule or tumour which if it is superficial is firm to the touch and gets fixed to the surrounding tissues and is not freely movable. Every nodule, however, is not a cancer. Some like warts, cysts, or adenomas are benign and are susceptible to treatment. But in order to be sure whether a nodule is cancerous, a bit of the nodule is taken and examined under the microscope and this generally gives a correct diagnosis.

Cancer that arises from the lining (epithelium) of an organ is called carcinoma; that which arises from the connective tissue cells is called sarcoma. Cancer of blood forming organs, in which the rapidly multiplying white blood cells circulate in the blood stream, is called leukaemia. Cancer involving primarily the lymph glands in various parts of the body is generally called lymphosarcoma.

#### **What makes a normal cell turn into a Cancer cell ?**

This is not yet known. However, there are many observations that throw some light on this problem.

##### *1. Carcinogenic Reagents*

In the England of the eighteenth century, naked boys used to crawl down chimneys to sweep them before the beginning of

winter. Many of these boys, as they grew up, were noticed to develop cancer of the scrotum and the skin over the abdomen. The cause of this cancer was found to be the deposition and rubbing of soot, coal-dust, and coal-tar on their skin over many years. Later on, scientists isolated from coal-tar a substance (dibenzanthracene) which could cause skin cancers in mice when it was painted daily on their skins for a period of a few months.

Cancer of the urinary bladder was found to occur frequently in workers in aniline dye factories, and the causative agent was found to be chemical substances like beta-naphthylamine and benzidine.

## 2. *X-Rays and Radioactive Substances*

During the nineteenth century, among the mine workers in the Schneeberg and Jachymov mines, now in Czechoslovakia, cases of lung cancer were detected in greater frequency than in the surrounding areas. It was later found out that these mines contained various radioactive substances which were the cause of cancer. Experimentally also, prolonged exposure of laboratory animals to X-ray or other radioactive substances had been shown to produce cancer. Many inexperienced technicians working with X-ray machines, in the past, were found to develop cancer of the skin over the hands and even leukaemia. Bone cancers were noted to have occurred more frequently in girls who were engaged in watch factories to paint dials of watches with luminous paint which contained radioactive material. Leukaemia and other cancers have been shown to have occurred among many Japanese who were exposed to the atom-bomb explosions.

## 3. *Chronic Irritation*

A slight but constant injury over a period of many years has been known to lead to cancer of that part of the body. A jagged



edge of a broken tooth rubbing against the tongue, gall stones rubbing constantly against the gall bladder, and smoking of short clay pipes by labourers in Europe, have led to cancer of the tongue, gall-bladder, and the lips respectively. In the Godavari region of Andhra Pradesh, many men and women smoke locally rolled cigars (chutta) with the burning end inside the mouth. Some of these people are known to develop cancer of the mouth. 'Kangari cancer' among the Kashmiris develops over the skin of the abdomen and thigh. This is due to the constant injury by the hot kangri, which is an earthen pot containing burning coal kept underneath the garments directly in contact with the skin.

#### 4. *Tobacco*

Chewing and smoking of tobacco are well known to be associated with cancer of the lips, cheeks, and the lungs.

#### 5. *Viruses*

Many tumors in animals, plants, and birds have been recognized to be caused by viruses. Experimentally also, some of the viruses have been shown to cause cancer. Currently it is being convincingly stated that leukaemia and Hodgkins disease are associated with some kind of virus. These viruses when they enter the cells are supposed to upset the normal chemical reactions inside the cells which leads to mutation of these cells into cancer cells.

#### 6. *Hormones*

Cancer of the prostate in men and of the breast in women can be greatly relieved by the removal of the testes and ovaries respectively in these patients, or by the removal of adrenal glands which are a secondary source of sex hormones in both sexes. Besides this, administration of counter-hormones (oestrogens in males and androgens in females) in such cases also effects a marked improvement.

The above observations show the associated links or probable causes in each case. But the basic cause of cancer still eludes us. Cancer is probably caused by the interaction of a number of factors.

### **Is Cancer Inherited?**

There are cases of some families, several members of which have suffered from cancer. In the laboratory, scientists have been able to propagate some strains of mice in which a large number of the males developed lung cancer and over 90 per cent of the females breast cancer. A careful analysis of data shows that certain types of cancer are hereditary and there is a greater likelihood of cancer of a particular tissue or organ developing in the descendants of persons who have suffered from cancer.

### **Is Cancer Contagious or Infectious?**

There is so far no evidence to suggest that any kind of cancer in human beings is contagious or infectious. Experiments conducted in this regard by taking cancerous tissues and injecting or implanting them on human volunteers once or twice over a period of many weeks, has not produced cancer in them. This shows that normal people have some defence mechanism in their bodies which does not allow the cancerous tissue to take root.

### **Early Detection of Cancer**

It has been estimated that when a cancer is located in the internal organs of the body, the time between the start of the cancer and its detection by the doctor is roughly about two years. Unfortunately this loss of time very often proves to be dangerous for the patient, because early detection and treatment by a competent doctor is almost the only course that is known today to result in a cure.

In an older person, the appearance of any one of the following symptoms should make him consult a cancer clinic or a doctor.

1. Any sore that does not heal.
2. Any lump or thickening in the breast or elsewhere in the body.
3. Unusual bleeding or discharge from the vagina in females, especially after menopause has set in.
4. Any change in a wart or mole.
5. Persistent indigestion or difficulty in swallowing.
6. Persistent hoarseness or cough.
7. Any change in normal bowel habits.
8. Loss of weight.
9. Persistent low grade fever and excessive fatigue.

On the presumption that even at its very beginning cancer may produce certain changes in the tissues or blood, attempts have been made to detect such changes so as to formulate techniques for an early diagnosis of the cancer. Some of these trials have proved very useful. Cancers which involve the body cavities sometimes shed their superficial cancer cells into the lumen of the organs where they get mixed up with the local secretions. An examination of vaginal secretions by the Papanicolau technique has greatly helped in an early diagnosis of cancer of the cervix of the uterus. The same technique has now been applied to detect cancer in other situations also, as for example in the stomach, lungs, and breasts.

Other tests advocated for the early detection of cancer make use of the estimation of various enzymes in the blood, injection and localization of isotopes, use of hormonal preparations and other immunological techniques. Many of these tests have proved very useful.

Diagnosis of a cancer in the later stages is no problem in ex-



pert hands. A thorough physical examination of the patient aided by various diagnostic procedures including X-ray provide the clues. A histological examination of a piece of the suspected tissue (biopsy) confirms the diagnosis.

### Is Cancer Curable?

It is curable if it is detected and removed before it has penetrated into other adjoining tissues or has spread through metastasis to other organs of the body.

Remarkable progress has also been made during the past two decades in the treatment of cancer by the use of X-rays through very powerful machines such as betatron, cyclotron, etc. These machines aim to deliver appropriate doses of the penetrating X-rays to small circumscribed areas deep in the body where the cancer is located, without in any way injuring the surrounding normal tissues. The same effect is also obtained by the use of radioactive substances such as Cobalt<sup>60</sup>, Caesium<sup>137</sup>, etc.

The discovery of a variety of anti-cancer drugs, which selectively destroy cancer cells and not the normal cells, have to a large extent revolutionised the treatment of cancer during the past few years. The nitrogen mustard group of drugs such as the nitrogen mustard itself, TEM, busulfan (myleran), anti-metabolites such as antifolics and glutamine antagonists, sex hormones like oestrogens and androgens, cortisone and other drugs like actinomycins, colchicine, and urethane are some of the modern weapons used in fighting cancer.

### Prevention of Cancer

A vast number of observations which show the links between cancer and certain drugs, reagents, and processes also tell us how to prevent cancer.

Cancer of the lung which is most prevalent in males in Western countries and is also said to be increasing in India, is known

to be associated with smoking cigarettes. WHO Press Release, 1963, had this to say in this connection: "It is generally accepted that there is a causal connection between cigarette smoking and lung cancer. Epidemiological studies have shown that there is a clear relationship between the number of cigarettes smoked and the incidence of lung cancer. Giving up smoking decreases the susceptibility to lung cancer in proportion to the number of years that smoking has been given up. Tobacco tars have been chemically shown to contain a series of known cancer-causing substances. Tobacco tars give rise to cancers of the skin when painted on animals. However, the precise mode of action of cigarette smoking is not clear. The fact that pipe smoking is only minimally associated with this hazard and cigar smoking hardly at all, is difficult to understand unless frequent inhalation with cigarette smokers, plays an important role".

The longer one smokes a cigarette the more tar and nicotine one inhales. The last half of the cigarette contains twice as much tar and nicotine as the first half. This applies to 'king-sized' cigarettes also. Further no method of treating tobacco or filtering the smoke has yet been demonstrated to be effective in materially reducing or eliminating the hazards of lung cancer. So smokers are advised to stop smoking or drastically reduce it.

Chewing betels is known to cause cancer of the mouth and pharynx. Elimination of this habit can prevent cancer at these sites.

Epidemiological evidence suggests an increased incidence of cancer of the cervix in women who marry early and give birth to many children. Avoidance of this can be a safety measure against cancer.

Cancer of the penis is almost unknown among the Jews in whom circumcision is done within one week of birth. It is rare

among Muslims too in whom circumcision is done between the ages of four and fourteen years. But it is fairly common among the Hindus who do not practise circumcision. This is not to say that everyone should get circumcised, but the purpose can be served by keeping the skin over the penis hygienically clean.

**Salient features of the commonly occurring cancers :**

*Cancer of the Lower Lip*

It is generally caused by the habit of depositing 'Khaini', a mixture of tobacco and lime under the lower lip from where it is chewed slowly. It is seen in the eastern parts of Uttar Pradesh and Bihar. Onset of the cancer at this site is usually preceded by the inner lining of the lip turning into a white patch on which a hard mass slowly develops, the top of which sometimes becomes an ulcer. Treatment is excision of the cancer mass. If cancer has spread to nearby glands, then their removal is also necessary.

*Cancer of the Cheek*

It appears as a hard thickening which is painless. Sometimes an ulcer forms over it. If a painless swelling or an ulcer with a hard base forms and does not heal up in about two weeks, one must consult a competent doctor to rule out cancer. Chewing or smoking tobacco and the chronic irritation caused by irregular teeth have been suspected to lead to cancer at this site. It is treated by surgical removal or exposure of the area to X-rays.

*Cancer of the Tongue*

It involves the back of the tongue and at this site grows unnoticed for many months. It then involves lymph glands in the neck which become enlarged and sometimes it is for them that the patient seeks medical advice. This is generally seen in men. Removal by surgery is difficult. X-ray treatment helps only if the cancer is detected early.



### *Cancer of the Larynx*

It causes persistent hoarseness. Any such hoarseness needs examination by an E.N.T. specialist. Surgery and X-rays can help if tried early enough.

### *Cancer of the Oesophagus*

At this site cancer causes gradual narrowing of the food pipe so that the patient complains of difficulty and pain in swallowing food. If it continues, the patient ought to consult the doctor as soon as possible.

### *Cancer of the Stomach*

Symptoms of cancer of the stomach are very vague to begin with. Indigestion followed by a progressive loss of appetite, vomiting in which undigested food is thrown out, gradually increasing weakness and loss of weight in a person past the age of thirty-five years, are some of the symptoms. In a later stages, the patient may vomit blood or pass it in the stool. Diagnosis needs careful examination, barium meal X-rays of the stomach, and insertion of a lighted tube (gastroscope) into the stomach through the mouth by which the whole stomach can be seen.

Unless the cancer is detected sufficiently early, surgical treatment does not help.

### *Cancer of the Breast*

This is more likely to occur in women over forty years of age who are unmarried, or have borne no children, or have not breast fed children. It begins as a painless nodule in the breast. If there is bleeding from or retraction of the nipple, deformity of one breast, dimpling of the skin over it and an unusual increase in the size of a part of the breast with tightening of the skin, the patient should immediately consult a competent doctor or a cancer clinic.

In an early case a surgical operation and X-ray therapy can

help. In the later stages, administration of male sex hormones or removal of the ovaries and adrenals have shown encouraging results.

### *Cancer of the Uterus*

This is a frequent type of cancer in women in India. It is more prevalent among poor women who have borne many children. The lower part (cervix) of the uterus is generally affected. Irregular bleeding between periods, or excessive or continued bleeding, or bleeding in a woman after the menopause should be reported to a doctor and expert advice obtained. As this type of cancer is frequent in India, any abnormal discharge through the vagina needs a complete check up.

### *Cancer of the Prostate*

This occurs in men, usually after the age of sixty. The main complaint is a frequent and insistent urge to pass urine and pain while passing it. A surgical operation, X-ray therapy, and administration of female sex hormones are the lines of treatment.

### *Cancer of the Lung*

This occurs in men generally after the age of forty years, and is more common in smokers. Cough, low grade fever and blood tinged sputum are the warning symptoms. An X-ray of the chest and bronchoscopy by which a lighted tube (bronchoscope) is passed through the mouth into the airways, to establish the presence of cancer, are helpful in diagnosing the disease. An early detection of cancer and removal of the affected lung is the best solution. In the later stages even an operation is ruled out.

### *Leukaemia*

This is cancer of the blood-forming tissues. There are many types of such cancer and they can occur at any age. The characteristic symptoms of the disease are low grade fever, general

weakness or feeling of tiredness, swelling of the lymph nodes in several places, and an enlargement of the spleen and liver. There is overproduction of white blood cells in the bone marrow and an increase in their number in the blood (leukaemia means white blood, though the blood itself never turns white) and frequently these cells are immature.

Many cases of leukaemia were detected in people who had been exposed to atom-bomb explosions in Japan. Over-exposure to X-rays, radium or other radioactive substances is known to cause leukaemia.

### *Cancer of Lymph Glands*

In such cases, the lymph glands in some particular site or all over the body get enlarged. These glands are not tender and are usually painless. Other associated symptoms are anaemia, loss of weight, and a general feeling of tiredness. X-ray therapy and various anti-cancer drugs are useful in these cases, but do not cure the disease.

There are certain cancers which affect only children. They are cancer of the eye (retinoblastoma), bone tumours and some tumours (Wilm's tumour) of the kidneys.



## Aging can be Fun

Aging was certainly fun for one of our neighbours, Mr. Gopal Dass. He was seventy-one years young. I call him young because there wasn't anything old about him except a good crop of snow white hair on his head, which he kept covered with his white turban. He wore his turban inside his house too, even while he was not wearing shoes. He was president of the area welfare committee and I remember, during the Pakistani conflict in 1965, he had kept vigil of the area for four nights along with his sons, grandsons, and others. He liked everybody and everybody liked him. To meet people and gossip with them was his hobby, and being a property-dealer he combined business with pleasure. He enjoyed life even at this age. He liked good food and almost all his life he had overeaten. He had diabetes and once a minor brain stroke also. On the insistence of his relations, he went to a doctor who advised him to reduce his weight by cutting down his diet. Mr. Gopal Dass did not like the doctor nor his advice and so never went to another again.

Personally I think he should have followed the advice of this doctor and I will tell you why.

### Diet

Recently, a nutrition expert carried out an interesting experiment in his laboratory. He divided 300 newly weaned rats into three groups. To group A rats, he gave a less than average but an otherwise well-balanced diet. To group B he fed a very rich diet giving them as much as they could take. Group C rats were given a diet similar to that of B group, but they were confined in specially built cages so that there was very little opportunity for them to move about much.

The results were startling. While group A rats fed on less than the average diet lived for more than 1500 days, group B rats who had rich diets lived for about a thousand days, and the rats in group C who also had heavy diets but with restricted movement survived only for 750 days.

These and similar experiments have proved conclusively that the nutritional pattern and mode of living are important factors that control the life span of an individual, even more than heredity does.

Over-eating and consequent increase in weight is one of the factors that lead to the development of heart attacks, high blood pressure, brain strokes, diabetes, and diseases of the kidneys. Ill-health in later years due to these and many other diseases is not merely the result of growing old, but is due to the long-drawn dietary indiscretions of youth and middle age. Statistics gathered from Insurance Companies show that between the ages of forty and forty-five, over-weight begins to tell upon health. An excess of 12.5 kgs. for instance lessens the expectation of life by 25 per cent and a further increase is even worse.

It is important to remember that this is entirely preventable.

and for this, the first thing to do is to avoid overeating. What is important is not the amount of food eaten, but a well-balanced diet. Lean and wiry individuals, are known to eat less but they keep physically fit till a very old age. While over-weight people who reduce to the normal weight for their age can have an almost normal life expectancy it is easier to avoid putting on weight than to reduce it later. I am reminded of a nutrition expert who helped his patients reduce their weight by a technique he had learnt by experience. On enquiry, his patients would invariably tell him of the little food they took, in spite of which they were increasing in weight. He would note down carefully the diet which the patient said he usually took. Then he would call the nurse-in-charge and instruct her to admit the patient in the ward and put him or her on the same diet as mentioned by the patient. All his patients lost 10-20 Kgms. of weight in three weeks on that very diet! This proves clearly that one can overeat without being aware of doing so.

### **Physical Exercise**

The role of daily physical exercise in maintaining good health is equally important. Like the rats in group C of the experiment, people who do little physical exercise await the same fate. In our sedentary civilization, a person generally confined to a chair in the office possesses a heart in his thirties which should normally belong to one in his fifties. From our point of view, the significant observation is that regular exercise can restore such hearts to a near-normal condition.

### **Mental Health**

While physical health is necessary to enjoy the growing years, this in itself is not enough. One needs to remain active and mentally alert as well. There is no truth in the statement that



mental powers normally decline as one grows older. Such an impression in the past was created by comparing the mental performance of twenty year olds with those in the fifty year group. This naturally gave inaccurate results because twenty year olds were more educated and informed because of the better facilities available to them than were available to those in their fifties when they were young. More recent follow-up studies of the same individuals at the ages twenty and fifty-five have shown that mental alertness and receptivity generally increases with age. Mental sluggishness, on the other hand, is the outcome of the continual rusting of unused faculties.

Examples of elderly people who take courses of study and do extremely well are seen increasingly at university convocations. Such people are really too busy to let their minds grow old. They defy the ravages of time and stay young despite the wrinkles on their faces.

### Multiple Interests

Old age is no bar to enjoying and finding satisfaction in life and also in being a useful citizen. But for this one must cultivate interests in activities which give pleasure and satisfaction. A person need not follow only one profession or a way of life throughout his life. A teacher need not remain a teacher always, a doctor remain a doctor always and a businessman or a shopkeeper remain in his restricted environment always. A doctor who is a bit of an artist, or a businessman with an interest in scientific subjects would be a greater asset to society. With some people two or more interests or professions go very well indeed. Such interests are challenging and, taken up in moderation, go a long way in keeping one mentally active, so when one retires one does not feel lost, but in fact one is relieved, and can pursue other activities.

### For Old Grand-Parents

Now a few words about those who are in the still older age groups, the grand-parents. Experience has shown that if they keep themselves busy with some regular work, they find life more satisfying and thus they are a source of comfort and joy to others as well. I knew an old man in our village who had been a farmer. But now he was not equal to the hard exertion of farming and his children had taken over. The old man could not sit idle. In his youth, he had learnt the job of a carpenter. Now he would go to peoples' houses in the village and mend their charpoys free. If on some day nobody needed his help, he would sit under a tree and make little playthings and distribute them among the children. They loved to collect around him and request him to make something for them.

My own grand-father used to keep a little shop but in later years he retired from this work. In his early life he had learnt to make a special kind of ointment for boils, which was known to be very useful in the days when the modern miracle drugs were not known. I remember him smearing the ointment on a small piece of round cloth and applying it to the boils of the young and the old. He would do this in the mornings and rest in the evenings. His total expenditure per month was only five rupees. But this petty sum and the time and labour well spent gave him great satisfaction right upto old age.

People with different interests can do the same. A retired teacher, a lawyer, or a doctor and others can help people around them by rousing or maintaining their interest in various matters and thus promote their zest for living. It is unhealthy for an old man to curb his interests and be a bore to himself and others. He should still have widening interests just like a river which starts as a rivulet and grows larger and wider as it goes ahead towards the sea.

## Spare parts for the Human Body

Quite some time ago a friend of mine related to me the following incident which I still remember. He said :

"A few days ago I met an acquaintance in the street. He recognized me, gave a good shake to my hand and started appreciating the contrasting match between my suit and the tie that I was wearing. I was flabbergasted, my hand which he shook became limp, and I had a few beads of perspiration on my forehead. In a faltering voice I told my acquaintance that the last time I met him he was totally blind and I remembered that he had had an accident in his factory as a result of which his eyes were damaged resulting in a total loss of his eye-sight. How was it that now he could see as well as any other normal individual?.

"Then he told me his whole story. He said that a few months after the accident he had consulted an eminent eye-specialist, who, after a thorough examination, told him that his blindness was due to damaged corneas (the front black portions of the eyes) and this could be set right. The doctor admitted him in



hospital and asked him to be ready for an operation which might be performed any time. He waited for a whole week, and then one night he was suddenly awakened from sleep and rushed to the operation theatre and the operation was performed and both the eyes bandaged. After an uneventful week, the bandages were removed and to his utter surprise he could see everything again, the doctor, the people around, the green grass and the flowers beyond in the lawn.

"The doctor had taken both the corneas from a person who had died suddenly of an accident and who had gifted both his eyes to the eye-bank of the local hospital".

My friend had asked me whether this could be true and I remember I told him that using the cornea from another person as a spare part and transplanting it to restore eye-sight was quite possible.

Nowadays, transplantation of the cornea is a routine procedure. In some foreign countries like the U.S.A. there are people walking about the streets with not only a borrowed cornea but also a borrowed kidney, blood vessels, artificial (voice-box) larynx, heart valves, etc.

### **Transplantation of Organs**

It was on May 28, 1908, that an American physiologist, Charles Claude Guthrie, took a plunge in this direction. He transplanted the head of a dog on to the body of another dog. The whole operation took about an hour and the animal lived for about a day.

Fifty years later, a Russian medical scientist performed another miraculous operation. One of his dogs on whom he had fixed two heads instead of the normal one, survived for about a month.

During the past two decades scientists have tried to replace

old organs or parts with new ones in experimental animals as well as human beings. The organs which have been transplanted are the eye corneas, kidneys, heart, lungs, liver, spleen, stomach, blood vessels, bones, nerves, etc. Of these the heart transplantation was the most sensational, but the successful and permanent transplants have, however, been obtained only with the cornea so far. Kidney transplants have also been successful to a certain extent, particularly those that could be obtained from the twins of the patients. A vast majority of other transplants could not take root in the patient and withered away after varying lengths of time.

### **Immunological Barrier**

Transplantation of the organs, though surgically possible, is not yet biologically so. The body does not accept these organs, as it does not accept any other foreign intruder, such as the disease-producing germs. It produces antibodies against the foreign proteins of the transplanted organs and these antibodies fight out the transplant, destroy it and dislodge it. Production of these antibodies is a great barrier against transplanting the vital organs.

We cannot afford to destroy this immunity barrier, because it is one of the most important lines of defence of our body. With its destruction, our body would be exposed to a variety of disease-producing germs which could destroy it totally in a matter of days if not hours. The problem before us now is, how to make the body accept the spare parts and at the same time not lose the defence mechanism of immunity.

Scientists have partially tackled this problem by temporarily paralysing the immunological barrier with the help of certain drugs such as antilymphocytic serum and also by radiation. The tremendous advances being made towards this, hold out the pro-

mise of it being tackled satisfactorily in the not too-distant future.

This will, of course, bring in its own problems as any new discovery or invention does initially. Who will donate the organs and if the facilities are available only for a few, then who are to receive these facilities and who are to be denied them? Perhaps it will require a complete change in our outlook towards the human body. These and other similar questions are even now exercising the 'American Society for Artificial Internal Organs', one of the most advanced societies in the field of utilization of spare parts of the human body.

### Stand-by Spare Parts

Another category of spare parts for the human body are those that cannot be fitted into the human body, but they stand by and help in cases of emergencies. They include what are called iron lungs, artificial kidneys, heart machines, etc. The iron lung is used in emergencies where the patient's own lungs, even though healthy, cannot function because of certain nervous system defects as for example in polio. The child or man is placed inside the machine which puts alternately negative and positive pressure onto the chest wall so that when it expands or contracts the air enters inside or leaves the lungs and thus the necessary oxygen is supplied to the body. The artificial kidney is a machine which helps, when a person's own kidneys for one reason or another stop functioning. To tide over the critical period till the kidneys recover, the patient's blood circulation is directed through the artificial kidney for purification of the blood. The heart machine performs the function of the heart when, during an operation on the heart itself, it needs to be stopped.

All these stand-by spare parts have helped and saved many



lives. Some patients having chronic kidney diseases go regularly, sometimes weekly, for a sitting with the artificial kidney and get their blood cleaned for a whole week at a time.

### **Spare-Part Surgery in Ancient India**

The first-recorded surgeon anywhere in the world who practised spare-part surgery was an Indian named Susruta, who lived probably in the sixth century B.C. He performed the operation of fixing an entirely new nose in place of the original which had been cut off. He describes his operation in his book 'Susruta Samhita' as follows :

"Now I shall deal with the process of affixing an artificial nose. First the leaf of a creeper, long and broad enough to fully cover the whole of the severed or clipped off part should be gathered and a patch of living flesh equal in dimension to the preceding leaf, should be cut from the region of the cheek and turned back and swiftly adhered to the severed nose which has been made raw already. Then the cool-headed physician should steadily tie it up with a decent bandage. Two small pipes should be inserted into the nostrils to facilitate respiration and to prevent the adhesioned flesh from hanging down. After that the adhesioned part should be dusted with the powder of liquorice, red sandalwood, and extract of Indian barberry. The nose should be enveloped in cotton and several times sprinkled over with the refined oil of pure sesamum. Clarified butter should be given to the patient to drink and he should be anointed with oil and also treated with purgatives. Adhesion should be deemed complete after the incidental ulcer has been perfectly healed up; otherwise the nose should be again scarified and bandaged in the case of semi or partial adhesion. The adhesioned nose should be elongated where it would fall short of its natural and previous length or it should be surgically restored to its natural size in the case of the abnormal growth of its newly-formed flesh".

## Help your Doctor to help you

You must have been to a doctor at some time or another. Have you carefully observed how he deals with a patient? He first asks certain relevant questions about the patient's illness, then examines him, and after that tries to diagnose the disease. If the doctor is not yet sure of the disease, he gets the help of a few laboratory investigations such as blood examination, urine test, X-ray, etc. When he is sure what the disease is, he prescribes the necessary medicines.

### Your Story

While trying to find out what is troubling the patient, the doctor asks a few relevant questions and it is on the basis of this information, that the doctor is able to make a diagnosis. If the information imparted to the doctor is too scanty, wrong, or only a half-truth, or if the doctor wants to know one thing and the patient tells him another, or if the patient proceeds to give him some elaborate irrelevant information, the doctor be-

ing busy and regarding the demands of other patients, cannot help his patient much. A typical illustrative dialogue between a doctor and his patient is as follows :

*Doctor* : Since when have you had the present complaint?

*Patient* : It is many years now.

*Doctor* : How many years?

*Patient* : Since I got my first baby.

*Doctor* : When was that?

*Patient* : Two years after marriage.

*Doctor* : And when were you married?

*Patient* : I don't remember.

Another type of exasperating patient is one who says : "I had malaria in the beginning which lasted for a week. The doctor did not treat me well and so it turned into typhoid fever. Now on top of this typhoid fever I have developed bronchitis also. Please, doctor, tell me what I should do now." The patient has not told the doctor anything about his complaint, but is himself making a diagnosis of his disease for which he has come to the doctor.

And yet another type is one who supplies wrong information to the doctor. Usually it is a young married girl who has been brought with a complaint of fever and general debility. She says she has had this trouble only for the last fortnight and never before. The doctor, to make sure of the disease, takes an X-ray of the chest and finds evidence of chronic tuberculosis which must have produced symptoms for many years, but the patient did not admit this before the newly-married husband or his parents. If the doctor had not taken the precaution of an X-ray, the patient would not have been given proper treatment.

Remember that a doctor is not an astrologer. He can only help, and he can help better if he is told the complete story of



the patient's illness in as few, simple and straight words as possible.

### **Proper Dress**

When one plays games, one wears suitable clothes to facilitate unhindered and active movement of different parts of the body. Similarly when one goes for a dinner party one wears the appropriate dress. But why do people not dress properly when they go to see a doctor? Perhaps they are poorly informed. This problem arises more often with female patients. When a doctor wants to take the blood pressure of a young lady patient, he cannot do so because of her tight sleeves. And sometimes an old patient comes wearing several layers of clothes. To examine such a patient properly the doctor would have to wait for half an hour at least.

Remember that if you take a patient to a doctor, dress the patient in loose clothes generally, which can be taken off easily if necessary.

### **Physical Check-up**

Some patients are fussy about an examination of the throat and more so about the examination of the urogenital system. In many a patient, the doctor has failed to locate piles as the cause of the anaemia, or cancer of the prostate or of the cervix, because the patient was hesitant about this examination and the doctor did not have the time to convince the patient that such an examination was really necessary.

### **Waste of Costly Medicines**

Many patients, even when their disease has been correctly diagnosed, do not undergo the treatment prescribed by the doctor. A large number of medicines are wasted not because the patient got cured earlier than the medicines were finished or that the

doctor changed medicines too often, but because, even though they were needed, the patient did not take them. This was either due to carelessness or because the patient did not like the taste of the medicine.

In a research study carried out recently in tuberculosis patients, free medicines were given to the patients so that they could take them in their own homes according to the doctor's instructions. They were, however, asked to get their urine examined at the clinic every week. This was done to detect whether the patients were taking the medicines or not. The startling fact noted was that 20 per cent of patients were not taking the medicines. And none of them admitted this. Naturally, many became either worse or took a longer time to get well.

Remember, that if you want the doctor to help you, you must help him with your co-operation and by following his instructions scrupulously.

## Diseases caused by Doctors

There was a time when nothing was known of antibiotics or the existence of disease-producing germs. It was the time when after performing post-mortems or operations, doctors rubbed their bloody hands on their coats and those who wore the most blood-stained coats were considered the most experienced. Women delivered in their own homes or in the hospitals. In one particular maternity hospital, it was observed that the incidence of puerperal fever after delivery and the resultant deaths were greater than amongst home deliveries in the adjoining areas. So large was the mortality that nearly half the women patients admitted there died. The reputation of the hospital became so bad that it had to be closed down. Later investigations revealed some startling facts. This maternity hospital was part of a medical school. Across the street was the post-mortem room and the anatomy hall. The doctors who taught the students carried out post-mortems in the mornings and immediately after, without washing their hands or taking any other precaution, attended on delivery cases. Infection from the dead



bodies was passed on by the doctors to women patients. The doctors were unknowingly the direct cause of the death of their patients.

What with the transfusion of the patient's blood with lamb's blood or the large quantities of blood removed from patients as a therapeutic measure, many patients died because they fell into the hands of the doctors. No wonder then that many such doctors were hanged or burnt alive, or if they were lucky they fled to other lands to practise the 'gentle art of healing'.

There has been considerable improvement since then. But even today a person is never absolutely safe in a doctor's hands. While there are 90 per cent chances of the doctor doing him good, nevertheless, the patient should always be on his guard. I shall explain why this is necessary.

### Heart Disease

A robust young man was selected for service in the army. Before joining, he appeared for a medical check-up. He was declared medically unfit because the doctor found a systolic murmur — a roughening of the heart sound. This young man had been an athlete in college. He could run without feeling tired, but this was not taken into consideration. He went to two or three other doctors in his street and they also confirmed the presence of the systolic murmur. He was told to take it easy and not to undertake much physical exertion. He became convinced that he had heart disease and thereafter led the life of an invalid.

Now the fact is that this systolic murmur need not invariably be associated with heart disease. It can be due to some insignificant asymmetry of the chest wall, changes in the rate of blood flow through the heart, due to anaemia, and sometimes without any apparent cause or abnormality. The significance of this murmur is to be considered in association with the general con-

dition of the person, E.C.G., X-ray, and other laboratory findings. An isolated finding of this murmur without any other abnormality has proved many a time of no particular significance. An eminent heart-specialist once said that 'civilized' mankind would be a good deal healthier if stethoscopes could be fitted with a device to prevent the systolic murmur from being heard'.

An abnormal shape and size of the heart of an infant, as seen in a X-ray film, has often been diagnosed as congenital heart disease much to the anxiety of many parents. But those who have seen the wide variations in the size and shape of the heart during a fluoroscopic examination (screening) while the infant is still crying or holding his breath, will not pass such a judgement.

#### **High or Low Blood Pressure**

High or low reading of the blood pressure and its faulty interpretation by some doctors has led to a lot of harm. Blood pressure readings, especially the systolic one, are known to be variable in the same person depending upon his mood and activity. A systolic reading of 170 in an over-weight woman of fifty-five years, while of no significance in itself, is the cause of a lot of anxiety and worry when labelled by her physician as high blood pressure. Similar is the case in a reading between 115 and 95, which is labelled many times as 'low blood pressure associated with a weak heart'.

#### **High or Low Pulse Rate**

High or low pulse rates have also been unnecessarily attributed to 'a fast heart which is liable to get tired and damaged soon' or a weak heart respectively. Actually just as there are variations in the heights of different persons so there are variations in the pulse rates also. (The same applies to a blood-pressure

reading). The frequently mentioned pulse rate of 70 per minute is the average figure derived by taking the pulse rates of hundreds of healthy people. Amongst them there are a few in which the pulse-rate is as high as 90 and others with as low a rate as 50 per minute, and they are no less normal.

### **Constipation**

Another very common factor which causes much ill-health in normal people is the misinterpretation by the doctor and subsequently even by laymen of the number of times bowels should be cleared per day. A person who does not have a daily motion is labelled constipated, and one who has two or more bowel movements a day is said to have diarrhoea, in spite of the fact that the stool is well-formed in each case. This interpretation, however, is not correct. In itself daily bowel action is not absolutely essential for good health. More or less number of motions per day generally depends on the kind of food that a person takes and also upon his daily routine. Ill-health in such 'constipated' people is due to the purgatives which are given to them and which irritate and upset the normal working of the bowels.

### **Congenital Abnormality**

Some doctors take pride in detecting and describing to their patients congenital abnormalities in their body which are of no significance whatsoever, as, for example, the absence of a rib or an abnormality in the eyes or in the nervous reflexes. This has often led to the attention of the person being fixed to that part of the body, causing anxiety or even neurosis.

### **Thalidomide Babies**

Another field in which doctors have done much harm to their patients is in the administration of drugs. Not long ago, pregnant women who complained of vomiting were prescribed



thalidomide tablets. In many cases, infants born to such mothers were crippled with various horrible abnormalities. These were later shown by experiments on animals to be due to taking thalidomide tablets. These tablets have now been withdrawn from the market. But what a heavy price the patients have had to pay to control their vomiting!

### **Indiscriminate use of Hormones**

An indiscriminate use of various hormonal preparations, in particular those of the adrenal cortex such as cortisone, prednisone, or dexamethasone have led to the appearance of new diseases, more serious than the ones against which these drugs were prescribed. Many cases of asthma and rheumatoid arthritis are known to have developed tuberculosis, diabetes, high blood pressure, or mental disturbances due to the administration of these drugs. These complications could have been avoided by foresight and care on the part of the prescribing doctor. The administration of cortisone or prednisolone in some cases has led to complete atrophy of the adrenal cortex, which stopped producing this hormone because it was being supplied from outside. Withdrawal of the drug at this stage led to near-fatal and sometimes even fatal results.

The same is the case with sex hormones and thyroid extracts which are sometimes given to brace up a patient who feels run down. These hormones lead to a slight stimulation in the beginning, but ultimately destroy the internal secretions of these glands. A withdrawal of the hormones for one reason or another leads to serious consequences for life.

### **Reactions to Penicillin**

Sudden death after injection, as for example, of penicillin, though rare, is known yet to be a well-recognized possibility. If

doctors are careful, they can avoid such reactions by proper testing of their patients before giving the injection.

~~'Operation successful but the patient died'~~

One sometimes comes across unpardonable and utter neglect on the part of the surgeon, as when a patient dies some days after the operation in which the surgeon forgot to remove from the operated wound a small surgical instrument, or a piece of gauze or cotton.

### Hospital Infections

In one study of patients admitted in a hospital in the U.S.A., it was found that 5 per cent of them suffered major toxic reactions and accidents because of the treatment or of the diagnostic tests performed on them. Figures in other such studies are even higher. Infection acquired by patients from the hospital environment has been, of late, a major hazard. It was found that every tenth patient had to stay in hospital longer than was necessary for the original disease. Some unfortunate patients had to spend much of the time of their stay in hospital, for being treated for complications and other diseases acquired from inside the hospital.

The idea of giving you all this information is not to frighten you but to guide you. 'A forewarned person is a forearmed person'. There is a variety of doctors, clinics, and hospitals in our country as is the case in other countries as well. All of them do not possess the same degree of technical skill and competence. In the hands of competent doctors the hazards of medical treatment are much less than say, in crossing a road in our large cities.

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